New Orleans Medical
and
Surgical Journal

Vol. 97 AUGUST, 1944 No. 2

43

SOME POSTWAR PROBLEMS IN MEDICAL EDUCATION*

LEWIS H. WEED, M. D.†
BALTIMORE, MD.

With twenty-seven months of war behind us and with an unknown number of months of war ahead, we are meeting today to witness the formal conferring of degrees upon a class of medical students who have completed the first important phases in their training as physicians. We cannot divorce these exercises from the war itself for most of this class before me is in uniform and its members constitute part of the Armed Forces of the United States. Realization that medical schools are playing their role in the war effort, that they are really a functional part of the medical departments of the Army and Navy, makes me appreciate more fully the high honor which The Tulane University of Louisiana has done me in asking me to speak at these wartime Commencement Exercises. Tulane has a most distinguished and interesting history as a University with its medical school as its oldest element: it has achieved high renown in meeting so completely and happily its academic and professional obligations. And in this war as in others past, Tulane's duties in the public service are being faced courageously and successfully.

This war has already had its great effect upon medical education, not only upon the strong outstanding schools like Tulane but also upon those schools with lesser financial support and with lesser educational opportunities. Shortly after the European phase of the war blazed into a total conflict, medical schools in this country began to feel the initial repercussions of the war. First noticed were the occasional withdrawals of faculty members for unheralded preparatory work in Washington, and there were the rearrangements of personnel in the sponsored hospital units which had been organized some years before in the large university hospital centers. Then with the President's declaration of a "limited emergency" (September 8, 1939), and with the re-creation of the Council of National Defense, the medical schools of the country began to experience more fundamental effects of the whole defense program. The passage of the Selective Service act added another stimulus to the preparations for actual warfare; this act necessarily had its reflections in all under-graduate colleges and professional schools. Almost without due and deliberate consideration, medical schools in this country adopted an accelerated schedule of instruction, whereby the long vacations were eliminated and the teaching progressed almost continuously through four academic years of nine months each, to complete the course within three calendar years.

As you will recall, the administrative steps in preparation for war followed in rapid succession. The partial emergency was converted into a total "unlimited" emergency (March 27, 1941), and various new organizations were created by Executive Orders of the President. When war finally came immediately after Pearl Harbor (December 8, 1941), the medical

*Address at Commencement Exercises, delivered to graduating class of Tulane University of Louisiana Medical School, February 12, 1944.

†Director, School of Medicine, Johns Hopkins University.

schools responded in valiant fashion. Faculties were momentarily disrupted by the withdrawal of the sponsored units for active duty and the student bodies soon became partially militarized by the commissioning of the physically fit males as reserve officers in the Medical Administrative Corps of the Army or in the Hospital Corps of the Navy. With that step taken, it was not long before the formation of a students specialized training corps was proposed; and after the adoption of a federal plan of technical training, students in medicine, dentistry and veterinary medicine were brought into the Armed Forces under a program originally designed for the physicist and the engineer. Then, too, premedical educational opportunities were cut sharply to fifteen months of college work for the Army and to a slightly more liberal allowance for the Navy. Into these months of premedical work, the minimal requirements in chemistry, physics and biology were crowded.

So today we see an almost complete militarization of medical education—the production of physicians has largely become a federal function, for the Government must have an assured supply of doctors for the Armed Forces and the civilian needs must not be neglected. And in this overall plan of medical training, provision has been made for abbreviated internships and for a small number of hospital residencies. Throughout the whole program of undergraduate medical education and postgraduate hospital experience, acceleration and condensation are outstanding characteristics. To maintain quality of instruction and quality of clinical work medical institutions must struggle vehemently; faculties are today striving and sacrificing themselves to uphold essential intellectual standards.

During these months of readjustment of medical education, the national program in medicine was going forward in spite of difficulties, inherent in the transformation of a peace-time system into a war-time activity. In 1940, the medical departments of the Army and the Navy re-studied the prepared plans for enlargement of their services and began the initial enrolling of reserve officers. In this period, the relationship of military to civilian medicine was carefully considered. The Division of Medical Sciences of the National Research Council was early brought into the picture (May, 1940), when the Surgeons General requested the quasi-governmental Council to organize civilian committees to serve in an advisory capacity. A few months later a Health and Medical Committee was appointed by the President under the Council of National Defense. This Committee, charged broadly with the national problems of medicine and public health, was soon transferred to the Federal Security Agency, under the Coordinator of Health, Welfare and Related Defense Activities. In the transfer, the Health and Medical Committee, which had only meagre funds at its disposal, was deprived of its executive functions; medical research pertaining to the war effort was not adequately financed through this Board. The committees of the Research Council, however, continued to meet the many requests for professional advice but the pressing problem of ample subvention of war research was not solved until the early summer of 1941 when the Office of Scientific Research and Development was established by Executive Order of the President. This Office was charged with responsibility for study of the instrumentalities of warfare through its already established National Defense Research Committee and was further instructed to form a Committee on Medical Research which should deal broadly with medical investigations pertaining to the war effort. The Committee on Medical Research coopted the committees of the National Research Council and has continued to use these bodies as advisory agencies. Adequate funds have been provided by Congressional appropriations to the Office of Scientific Research and Development and today a large proportion of the competent medical scientists in this country are working on investigative projects directly connected with the war effort and financed by Government contract.

The type of research necessarily has to be focused on those problems which directly pertain to military medicine and much of the work therefore has a very definite practical application. On the other hand, the members of the Committee on Medical Research have been aware that certain of the problems of military medicine can only be advanced by definite attack on fundamental mechanisms and these aspects have not been neglected. The problems range widely from those of aviation medicine, gas casualties, malaria, neuropsychiatry, shock, tropical diseases, surgery, venereal diseases, blood substitutes to the wholly practical studies of physical standards of recruits. In this wide effort Government funds approximating $7,500,000 and involving over 400 separate projects are being devoted to the purpose during the current year. And it must be a matter of great satisfaction to the faculty of Tulane University that certain very important investigations here within the University are being carried forward under federal contract.

This background of almost four years of medical effort in Washington and the country at large is necessary for us to appreciate the postwar problems which will confront every educational institution and university hospital. It was easy enough for medical schools to accelerate their programs of teaching but the problems of deceleration will be profound. The mechanisms of readjustment of the present curriculum to the old academic procedures can be minimized though they will cause many a difficulty to deans and to curriculum committees. But to speak of deceleration implies that medical schools will return to the prewar type of medical instruction over four calendar years during which the students followed a course characterized by some critics as one of academic leisure. The advantages of this relatively slow course of instruction lay in the fact that it gave the faculties sufficient time for adequate and enthusiastic preparation for teaching, that it gave the students opportunity for the absorption and digestion of medical instruction. In spite of critical statements, medical teachers in general believe that the four years were busy years for the students: unquestionably the prewar schedule resulted in the production of first-class, well-trained medical men.

Assuming then that wisdom bids us return to the prewar plan of a four-year course of study, it is obvious that medical schools will face many important changes in the curriculum. The war with its wide dispersion of troops throughout the world has already demonstrated the need for additional emphasis on tropical diseases—a subject in which Tulane almost alone of medical schools has developed in a distinguished manner. Then, too, preventive medicine in the widest sense (sanitation, epidemiology, industrial medicine) will be represented in a larger way in the curriculum. Revision of the curriculum is inevitable but such revisions are always the periodic concern of faculties.

But the postwar medical school will be confronted with other highly complex and perplexing problems. Many of the medical officers in the Armed Services, particularly those of the younger group, will desire additional academic work in their chosen field of medicine. Many of these physicians will be without sufficient funds, and if the medical schools are to provide adequate postgraduate opportunities for these men, fellowships must be made available, either through federal or state grants, through university stipends, or through foundation support. The group of these eager young men will be large, for with 50,000 medical officers in the Armed Services and with the war now proceeding into its third year, there will be several thousand who will feel the need for additional instruction, for hospital work, and for training in the medical specialties. It is questionable whether the medical schools of the country will be able, on the present basis, to provide the needed opprtunities, as the schools were before the war operating at capacity and accepted only those undergraduate students who could be provided with ample facilities for laboratory and clinical instruction.

One of the obvious problems of the postwar medical school will center about the necessary readjustments of the premedical courses with the substitution of a two-year or four-year college course for the present fifteen months. Such a lengthening will inevitably disturb the flow of students into medical schools for one or more years. It has been suggested that one of the wise steps to be taken by some American medical schools would be to close the doors of the institutions to new students for a period of two or three years. The institutions could then devote their major efforts to the postgraduate training of returning medical officers so that this group of young physicians would go out into medical practice with renewed enthusiasm and with full knowledge of recent advances. During this period the premedical students, now hastening through the accelerated fifteen months' preparation, would develop a desirable intellectual maturity and a better preparation for their future undertakings. There would be a return to the type of premedical preparation which was insisted upon before the war by all of the better medical schools of the country.

Such a proposal, however, requires consideration of its practicality. The mere financing of the whole procedure, whereby undergraduate student fees would be largely eliminated and whereby funds for fellowships and postgraduate training would necessarily have to be provided, presents a problem of utmost difficulty. Perhaps the well endowed schools would look upon the procedure as one of sufficient merit to justify expenditure of endowment, were it permitted; perhaps state, municipal or federal financing could be achieved; or perhaps also private or foundation support could be obtained. Against the proposal would be argued the partial interruption of production of new medical graduates who would be needed by the hospitals for interns and residents. Again and again the financial problem will creep to the fore. Medical schools will need all possible funds, for the income from endowments will continue to be very low, tuition fees will necessarily remain approximately unchanged, and salaries for professional and technical staffs will have to be increased to compensate for the fall in the purchasing power of the dollar.

Wholly apart from such financial considerations, it must be realized that our educational system in medicine during the past fifty years has been based upon the major tenets of thorough preparation in the premedical sciences, of basic training in the preclinical subjects, of insistence upon bedside teaching, with its adjunct of laboratory control. Throughout the whole process the development of the inquiring attitude of mind in the students has been the aim of medical teachers, but we are today laboring under a system which has become antiquated due to the wide spread of research interests. Medical schools universally possess departmental organizations where teaching is confined to the proper cubicle, labelled with one of the established subjects of medical instruction. Medical research, however, has broken down the border between these compartments; and the department has become merely a convenient teaching mechanism. The anatomist, who is responsible for instruction in the structure of the body, feels free today to extend his investigations by physiological methods and to work wherever his particular problems lead him. The departments, with their confines of teaching facilities, will probably continue, but during the past three decades the whole subject of medicine has so widely expanded in many special directions that medical schools are no longer able to provide complete opportunities for medical instruction. No single institution is able, under the present distribution of medical talents in some sixty-six medical schools in this country, to supply instruction, under competent teachers, for the special preparation and special training required in all of the many facets of medicine.

Two alternatives immediately present themselves. The continental system of migration of students to outstanding professors presents a possible solution; but in spite of the encouragement given to such

migration in certain medical schools during the past twenty years, the procedure has been followed only rarely by the students, and then with greatest difficulty because of curricular divergencies in the various schools. Migration is also costly to the student and it is unlikely in America to afford the wide opportunity which the medical student of the future should have available. Another possible solution of the problem of providing complete medical opportunities would lie in the consolidation of medical faculties. Instead of the present number of schools we might envisage a maximum of twenty or thirty medical institutions, with consolidated faculties gathered from the existing schools and with admission of much larger classes. Such schools would necessarily provide ample laboratory facilities and could be located only in those large cities where ample hospital beds are available. These schools would have the responsibility for complete coverage of medical subjects and would require large financing. The cost of medical education, which has gradually and often rapidly mounted in the past forty years, would reach limits which would cause university presidents and trustees to shudder. But such schools, representing the condensation of the teaching talents in American medicine, might prove to be capable of producing a better type of physician, more widely trained and more effectively taught by masters who are capable of inspiring as well as instructing.

Even if such proposals are considered now as visionary, it is clear that in the postwar period medical research will inevitably expand and will produce results of large practical value. It is likely that the medical departments of the Armed Forces will continue to work on those problems which stretch beyond civilian medicine and which are peculiar to military operations. On the civilian side, it would be a tragedy to American medicine if institutional support of medical research were cut, due to the lack of funds available to university faculties. Subsidy of medical research by the philanthropic foundations will, in the nature of things, never prove sufficient for the national needs in medicine; foundation subvention will act as a spur to private and institutional support. In the postwar period the demands on the foundations for other purposes than the support of medical education and research will unquestionably be profound and it seems unlikely that any very large grants can be expected. While it is very difficult to predict, one could defend the premise that no considerable augmentation of the capital of existing foundations will be forthcoming; it is probable that many of the present foundations will gradually and wisely disburse their funds. With the inevitably high taxes of the future, it is also unlikely that any new foundations of magnitude will be established.

It is in the minds of many educators that research in the future will be in greater and greater part financed by grants to universities from the large industrial companies. These corporations have during the past few decades developed extraordinarily competent research groups within their own organizations and many of them have been willing to devote their funds to fundamental problems in the field of their interests. But these companies must necessarily procure their investigative staffs from the universities and it is not only desirable but logical that they should continue their support of fundamental academic undertakings. Funds from the outstanding commercial organizations of this country have for the most part been unconditionally given and universities have in no way been subject to restrictions in the clear furtherance of research, with unhampered publication of investigative findings. Here, as in almost all considerations of medical education and research, financial factors enter, and they will inevitably enter in the postwar period.

All of this discussion has presupposed that medicine in this country will return to the prewar type of medical practice, of medical education and research, of hospitalization and of public health procedure. Such an interpretation at this time is hardly warranted, for with the various na-

tional movements well underway it is wholly unlikely that the pattern of medical practice, as established during the past few decades, will survive unchanged. For years we have listened attentively to many arguments for the socialization of medicine—arguments based mostly on the fact that medical skills are not available throughout the total population. No one can deny that the proper distribution of medical talents whereby the entire population receives the best available medical care is a question of utmost moment. No one, I feel, would care to eliminate the very desirable doctor-patient relationship, but every one would agree that this relationship might be extended through some better dissemination of medical abilities both on the geographic and economic basis. It would seem inevitable that in the postwar adjustment of physicians to the needs of the country a better distribution of physicians, of hospital-facilities and of public health service would be attempted and possibly achieved. Every one who has studied democratic government would oppose federal control of all aspects of medicine and health; but government intervention has, in the development of public health procedures, been an inevitable and useful development of the last fifty years.

The medical profession of America has its own problems to solve. If the profession cannot devise a method of providing the best of medical care and public health procedure for the large population of the United States, there will almost inevitably follow some type of federal intervention, as witnessed by bills now pending before Congress. It has been said many times, almost to the point of boredom, that the medical profession itself must do its own planning if it is to reserve those essentials of medical practice which the profession itself feels are paramount to successful application of current medical knowledge. The profession must be helpful in legislative matters: it must be constructive and not destructive.

Even if the procedures leading to national socialization of medicine are avoided in the next few years it is obvious that many health programs will be started with promise of success. The prepayment plan of hospital insurance has already achieved great development; it is a welcome addition to the insurance benefits of large groups of individuals. The hospitals of the country, which have been accepted through one or another of the organizations, are benefited greatly by the guarantee of hospital costs, and the individual is able to spread his risk of hospital needs over a period of years. The enlargement of the hospital scheme to include medical service seems a logical step and in many places the tentative arrangements are already going forward. The inclusion of physicians' services in the prepayment plans presents certain important problems to the university hospitals in regard to selection of professional staff and to maintenance of teaching beds. Yet these difficulties, great as they now appear to be, would seem capable of solution. Whatever the changes in medical practice or hospitalization may be, they will be, in part at least, reflected in medical education.

These, then, are but a few of the problems which medical schools will encounter in the coming years of peace—problems in the postgraduate training of discharged medical officers, in the probable changes in medical education and medical research, in the adjustment to a possible change in medical practice. Are medical schools today thinking of these problems in an adequate way? Are medical schools appointing committees or designating groups to undertake study of all of these possibilities of future change so that should peace come suddenly, or slowly, the faculties would have definite plans of procedure in the postwar period? In general, I think, the answer is No; the unknown and intangible factors in the postwar adjustment are so diverse that most faculties feel that they cannot make a concrete attack upon the problem. The need is there and it behooves every medical faculty to take cognizance of these great changes in medical practice and public health, medical education and medical

research which are already showing above the horizon.

The study of these postwar problems by medical faculties would be made less difficult if an effective national committee were to be appointed by the President to consider all aspects of medical and health questions. Since the discontinuance of the Health and Medical Committee some months ago, several suggestions regarding a board for overall planning and functioning have been made; all of these suggestions point out the need for inclusion in its membership not only of medical men, but also of representatives of the public, of labor, of children, of women. There is today no body with authority to meet the many problems of medicine and public health in the national picture; there is no board to determine the responsibilities of American medicine in postwar Europe, to advise regarding the proper allocation and distribution of available medical supplies, to study the proper dispersion of physicians for maximum provision of the health services, to plan for the professional employment of the medical officers on discharge, to consider broadly the questions of postwar medical education and research. These are but a few of the broad unsolved questions in medicine of the immediate and postwar period; there is great need for a national commission to consider them.

So at a Commencement in the midst of war, we, who have the problems of medicine and particularly of medical education before us, can point out that there will be need for the young physicians in any type of postwar social organization. Fortunately, the young man who goes forth today as a doctor of medicine will find that his years of service in the Medical Corps of the Army or Navy are not wasted time. In many branches of the Army and the Navy, war service contributes in no way to training for a civilian career; the talents of men are devoted to tasks which are particularly those of military effort. In medicine, however, war presents opportunities not only by service but for learning: the young medical officer will find that his years of service will be productive. You young men are favored in being in a period of rapid advance in medicine for wars have always brought forth new knowledge and new procedures in medicine and public health. You have before you an impending adjustment to military exigencies and you will have a postwar problem of additional education and of meeting the postwar practice of medicine. Luckily youth worries not about security and social organization as does old age; youth can cope successfully with social and economic change. Members of the graduating class, you are fortunate indeed to have had your medical instruction in a great university: you now go forward well prepared to meet these immediate and future demands upon you as physicians. Medicine has its great tradition of service whether in peace or in war, and you cannot fail to be aware of your duty and privilege of maintaining your part in that high tradition.

THE DIAGNOSIS OF DISEASE WITHOUT INSTRUMENTS OF PRECISION*

RALPH H. MAJOR, M. D.†
KANSAS CITY, KANSAS

I hope the title of this paper does not convey the impression that I advocate the practice of medicine without the use of instruments of precision. I hope also that this title may not seem like the credo of a reactionary, who is too sluggish intellectually, to keep up with the rapid advances in medicine and as a defense mechanism "pooh-poohs" procedures which he either has not taken the trouble or lacks the ability to understand. There has never been a period in the history of medicine, the advances of which have been comparable to those of the last century, and most of these advances have been directly or indirectly the result of study with instruments of precision.

*Read before the eighth annual meeting of the New Orleans Graduate Medical Assembly, March 8, 1944.

†From the Department of Medicine, School of Medicine, University of Kansas.

There is, however, with every new advance, a tendency to forget some of the things that have long been the heritage of the medical profession, and also to neglect the simpler methods of diagnosis and therapy for the new ones which have recently appeared. Some younger physicians apparently forget, for instance, that fluid in the chest can be diagnosed by physical examination as well as by the x-rays, and it is necessary to bring to the attention of many physicians that Fowler's solution will often lower the leukocyte count in leukemia quite as effectually as the x-ray. Some of these same individuals would, perhaps, be very surprised to learn that Hippocrates recommended artificial pneumothorax in the treatment of pulmonary diseases, and that Galen was a master of psychoanalysis. Looking at the matter, however, from the other point of view, there are many conditions which can be diagnosed only by the use of instruments of precision; and without these instruments, many diagnoses, as well as therapeutic measures, are apt to be as unsatisfactory as the speculations of medieval scholastics. On this account, I shall attempt in this paper to steer a middle course, and shall point out, from time to time, certain diseases in which the use of instruments of precision are just as necessary as their use is unnecessary in others.

At the beginning of any paper, it is, I believe, customary to define the subject about which the essayist is going to speak. In this particular instance, this is rather difficult. The reason is, of course, obvious. What is an instrument of precision to one individual may not be so to the other. There is also an innate tendency to regard as instruments of precision those instruments which are very complicated, and whose working the novice does not understand very well. There is another difficulty which arises from the fact that what seems to the uninitiated an instrument of precision becomes, as one is better acquainted with and knows its limitations and its pitfalls, not an exact instrument, but one that gives only approximate results.

When the stethoscope was first introduced it was considered an instrument of precision, and the same was true of the thermometer and the blood pressure apparatus. At the present time they are not considered by physicians as instruments of precision any more than the finger tips. This is due to the fact that most of us have become familiar with these instruments; and also because this familiarity with them has shown us that they are, after all, subject to strange caprices, and can easily lead us astray.

In discussing this subject we might, perhaps, make a practical definition by including as instruments of precision those instruments which can only be employed after considerable special training, which is not an accomplishment of most members of the medical profession. I realize that this classification is rather inexact, but I shall include under instruments of precision the x-ray, the electrocardiograph, and various quantitative laboratory procedures which can be carried on only in a well-organized laboratory with special apparatus, which can be employed only by persons with special training.

One of the most important aids a physician has in the diagnosis of disease is the history. It is a conservative estimate that in a great majority of patients the history obtained from the patient contributes at least fifty per cent, and according to some, seventy-five per cent, toward the establishment of a correct diagnosis. It is surprising how many incorrect diagnoses are the result of careless history-taking. The history of a patient who has an inability to walk in the dark and has lightning pains in the legs is just as important in the diagnosis of tabes dorsalis as the presence of a positive Wassermann. Similarly in a patient who gives a history of increasing sluggishness, gain in weight, inability to keep warm at night in bed, increasing dryness of the hair and roughness of the skin, we can make a diagnosis of myxedema, and predict that the basal metabolic test, if carried out properly, will show a rate below normal.

Volumes have been written on the sub-

ject of pain, and in a host of diseases nothing helps us more in the diagnosis than careful attention to the location and character of the pain present. In the year 1768 William Heberden, Sr., described a disease picture which has become classic. Heberden, who wrote a chaste Latin, described the disease as *pectoris dolor*. His son, who later translated his father's work into their native tongue, English, called it *angina pectoris;* and since that time, it has been known generally under this term. This description should be part of the reading course required of all medical students. Heberden writes:

"They who are afflicted with it are seized while they are walking (more especially if it be up hill, and soon after eating) with a painful and most disagreeable sensation in the breast, which seems as if it would extinguish life, if it were to increase or continue; but the moment they stand still, all this uneasiness vanishes.

"In all other respects, the patients are, at the beginning of this disorder, perfectly well, and in particular have no shortness of breath, from which it is totally different. The pain is sometimes situated in the upper part, sometimes in the middle, sometimes at the bottom of the os sterni, and often more inclined to the left than to the right side. It likewise very frequently extends from the breast to the middle of the left arm. The pulse is, at least sometimes, not disturbed by this pain, as I have had opportunities of observing by feeling the pulse during the paroxysm. Males are most liable to that disease, especially such as have passed their fiftieth year.

"After it has continued a year or more, it will not cease so instantaneously upon standing still; and it will come on not only when the persons are walking, but when they are lying down, especially if they lie on their left side, and oblige them to rise up out of their beds. In some inveterate cases it has been brought on by the motion of a horse, or a carriage, and even by swallowing, coughing, going to stool, or speaking, or any disturbance of mind."

This disease has claimed many notable victims. Among them John Hunter, Matthew Arnold and Charles Dickens. John Hunter, in describing his symptoms, said the pain was "as though the sternum was being drawn back to the spine," while Matthew Arnold described his sensation during the attack being "as though there were a mountain on my chest."

The most common distribution is over the sternum and down the inner aspects of the left arm. This is by far the most common picture; but it occasionally varies, depending upon the location of the coronary constriction.

In the diagnosis of this disease we depend in most instances upon the history, aided by the physical findings. The electrocardiogram so often leaves us in the lurch, as it may show little deviation from the normal. Indeed, I have seen several patients dying from this disease in whom the autopsy findings were not characteristic or distinctive. Yet, the history alone of the affection, as so masterfully portrayed by Herberden more than a century ago, permits the diagnosis of the disease in most instances. The story of a severe pain under the sternum gradually increasing in intensity and radiating down the left arm is unlike the story of any other disease. Pain is a very real phenomenon, and of real importance in diagnosis, but is, however, one that has refused to allow itself to be recorded on any type of a registering device.

The relatively recent discovery that coronary occlusion is a disease which is both frequent and important has led unwittingly to a certain confusion regarding angina pectoris. Many physicians assume that all cases of angina are really examples of coronary occlusion and some even suggest the complete scrapping of angina pectoris as a clinical term. With this, I personally do not agree. The term itself, angina pectoris, cannot be defended as an accurate expression but if we threw out inaccurate expressions in diagnosis, we would have to revamp medical nomenclature.

I think there is excellent evidence that a patient may have attacks of angina pectoris for years and never have a true coronary occlusion, and after a time be relieved of all cardiac symptoms. Others after suffering from angina pectoris for years may have a fatal coronary attack or may die without a demonstrable occlusion. To my mind the relationship between angina pectoris and coronary occlusion has a close analogy to that between intermittent claudication and embolism of one of the arteries of the leg. The patient has arteriosclerosis of the popliteal artery which produces intermittent claudication, later a thrombus forms on the wall of the artery, is then detached and embolism results.

Another disease which has a very characteristic history is duodenal ulcer. The characteristic features of the history of this disease are the chronicity and pain. Pain on an empty stomach, recurring two to four hours after meals and relieved by food and alkalis, is pathognomonic of this disease. I have noticed that the internists in our clinic usually make the correct diagnosis of duodenal ulcer in most patients from the history alone, and before the patient has had a gastric analysis or been in the hands of the roentgenologist. In a recent examination of one hundred consecutive cases of duodenal ulcer I found that all of them gave a history of chronicity, of pain before eating, and two to four hours after meals, and that all but one were relieved by either food or alkalis and usually by both. This statement should not be construed as a suggestion that the gastric analysis and the x-ray examination be omitted in these cases. Indeed, we carry out both procedures in every case of suspected duodenal ulcer. It does, however, stress the importance of the history in the establishment of the diagnosis of this disease, and clearly shows that the physician need not throw up his hands and refuse to treat a patient with duodenal ulcer because that physician does not possess an x-ray apparatus or does not care to carry out a gastric analysis. Indeed, I have recently seen a patient who gave a typical history of duodenal ulcer extending over a period of several years, who had no treatment because the physician could find no x-ray evidence of ulcer. This patient had never had a gastric analysis. The gastric analysis in our clinic showed a marked hyperacidity, and our roentgenologist succeeded in finding an ulcer in the duodenum.

Dr. Paul White, in discussing diseases of the heart, makes the following very significant statement. Among the procedures necessary for correct diagnosis, he says, "First and most important of all is the story of the patient. After the history taking there comes next in importance the physical examination. Then there follow methods of less value, but nevertheless of importance, blood pressure measurement, roentgenology and electrocardiology."

Heart disease in the year 1942 was the cause of 386,141 deaths in the United States. In no field of medicine have the advances in accuracy of diagnosis been more spectacular than in cardiology. These advances have been due in no small measure to the employment of instruments of precision, particularly the electrocardiograph. It is astonishing, however, how accurate diagnoses can be made employing only the procedures of inspection, palpation, percussion and auscultation. While the electrocardiogram has been of the utmost value in explaining, for instance, the mechanism of various types of arrhythmia, yet these types of arrhythmia can be diagnosed with a great deal of precision by simple methods of examination.

Inspection of the patient, in this era of instrumental and chemical progress, is in some danger of becoming a lost art. It should be pointed out, however, that by inspection alone, even unaided by palpation, we can make a correct diagnosis in a great variety of cardiac disorders. The pallor of aortic disease as contrasted with flushed face of mitral disease, remains as striking a phenomenon as a century ago. The throbbing carotids almost establish the diagnosis in aortic insufficiency. Cardiac irregularities may usually be clearly diagnosed by inspection of the cardiac apex alone. Ir-

regularities produced by an extrasystole which is followed by an abnormally long pause is just as obvious from watching the apex as it is in a tracing taken from the radial artery. Dr. John King has shown that in bundle branch block there is a bifid, or double, apex thrust, which is made particularly visible by strapping an applicator or a straw at the apex.

The location of the apex gives us, of course, information of great value regarding the size of the heart. We should also remember that in mitral disease the apex is displaced outward, while in aortic disease it is displaced outward and downward.

These are but a few of the bits of information we glean from inspection alone. Many others occur naturally to our mind —the slow heart beat of heart block, the tremendous heart rate of paroxysmal tachycardia.

Even before physicians devoted their attention to inspecting the heart, the pulse was regarded by the physician as an inexhaustible storehouse of information. It still remains so. The physicians of ancient Egypt two thousand years before the birth of Christ felt the pulse of their patients. Rufus of Ephesus, who practiced during the reign of Trajan in the second century, wrote a treatise on the pulse, of which Sir William Broadbent in 1890 remarked, "His description of the different characters of the pulse leaves little to be added at the present day." Sir James Mackenzie, who contributed most to our knowledge of heart conditions in his generation by the use of the sphygmograph and instrumental methods, wrote the following as late as 1926: "In the examination of the arterial pulse several methods may be employed, as exploration by the finger, by graphic records, and by instrumental measurement of the arterial pressure. By far the most important of these methods is the first. There is a tendency to exalt the others at the expense of the digital, but no apparatus can ever replace the trained finger. No doubt the other methods can give very definite information of a limited kind, but in diagnosing the patient's condition they should only supplement the digital examination."

Obviously such an important subject as the pulse can only be touched on very sketchily at this time. Sir William Broadbent in 1890 wrote an entire volume on the pulse, which we can still all read with great profit. Although in his day the electrocardiograph was unknown, it has at least not unearthed any type of pulse with which he was unfamiliar. Sir James Mackenzie in 1902 established his reputation instantly by the publication of his book, "The Study of the Pulse." This classic work was written to answer the question of the patients with an irregularity of the heart who constantly asked Mackenzie, "Doctor, what is going to happen to me?" Three types of irregularities, which he described as the youthful type, the adult type, and the dangerous type, still remain as the three outstanding varieties of cardiac irregularities which physicians encounter. Differentiation of these three types by Mackenzie allowed him to answer the patients' question as to what was going to happen to them. The youthful type of irregularity, which we call today sinus arrhythmia, he told his patients was harmless, and the many patients of this class who had previously been treated for serious heart disease were told to get out of their beds, forget their hearts, and go on about their business. His advice is still sound.

The second group he called adult irregularities, which we call today extrasystoles or, more accurately, premature contractions. He told patients with this irregularity that they were not incapacitated by the irregularity itself. While he recognized, as we do today, that patients with serious heart disease often show extrasystoles, he pointed out that the prognosis depended, not upon the extrasystoles, but on the condition of the patient's heart muscle.

The third group of irregularities, which Mackenzie called the dangerous type of irregularity and we call today auricular fibrillation, form a rather different category. To the families of these patients he gave, invariably, a very grave prognosis.

With the thirty years more experience with these types of irregularities than Mackenzie had at the time he published his volume on the pulse, we now know that transient fibrillation occurs in some patients who make a perfect recovery. But these and similar observations are only occasional exceptions to the rule that Mackenzie laid down.

Sinus arrhythmia is readily recognized by feeling the pulse, the heart rate being invariably increased on inspiration and decreased during expiration. Extrasystoles are only the "dropped beats" of the older authors. In auricular fibrillation the "pulsus irregularis perpetuus" of the older writers expresses most strikingly the impression the pulse gives the examiner. The bigeminal pulse, the occurrence of two beats close together followed by a longer pause, was first satisfactorily explained by Mackenzie, who showed that two mechanisms might be involved. In the first instance, in a heart block, each third auricular beat failing to pass through produces this phenomenon. The second mechanism, alternating extrasystoles, produces the same type of pulse. Clinically, the condition is seen most commonly in patients who have had too much digitalis, and when they appear in a cardiac patient it is a warning that digitalis should be discontinued for twenty-four hours at least.

The collapsing pulse of aortic insufficiency is so characteristic that the diagnosis of this condition can be made by palpating the pulse. Similarly, the small hard pulse which rises slowly and falls very slowly is equally diagnostic of aortic stenosis. The pulsus alternans, of such grave significance in myocardial disease, and the dicrotic pulse so suggestive of typhoid fever can be easily perceived by palpation. The bigeminal pulse, in which we feel two beats followed by a pause and then two more beats, is a common finding in patients who have taken too much digitalis. When a physician has been giving a patient digitalis for a time and feels this type of pulse, it is a warning to him to discontinue therapy—and a warning which is just as unmistakable as that shown by an electrocardiogram. Among other palpatory findings of great diagnostic importance are the presystolic thrill of mitral stenosis, the rasping systolic thrill of aortic and pulmonary stenosis, and the diastolic shock of an aortic aneurysm. These findings are all just as important and as certain as anything in medicine.

Percussion of the heart always repays the effort expended. Percussion of the heart demonstrates cardiac enlargement far better than a study of axis deviation in the electrocardiogram. The displacement of the heart to either side can usually be as accurately demonstrated by percussion as by the x-ray.

Ausculation of the heart has led many great men astray. Läennec, the father of auscultation, in the first edition of his work in 1819, stated that cardiac murmurs were always produced by valvular lesions, and added that "their situation and the time at which they are heard, indicates obviously which orifice is affected." Seven years later, in the second edition of his book, he was wiser. He had made many diagnoses of valvular lesions in patients who at autopsy had shown normal heart valves. This led him to deny any value whatever to auscultation of the heart, and, as Potain remarks, he fell into a second error, greater than the first. Every physician practicing medicine is constantly puzzled to know whether or not a heart murmur is of any significance.

Certain murmurs leave no doubt as to their significance. The presystolic rumble of mitral stenosis accompanied by a presystolic thrill is one of the most clean-cut findings in clinical medicine. Similarly, a soft diastolic murmur of aortic insufficiency accompanied by a Corrigan pulse leaves little doubt as to its significance. There are a few other rare murmurs, as in aortic stenosis and pulmonary stenosis, which are rarely encountered, but when they are heard permit no doubt as to their significance. But, aside from these classic examples there are a great variety of murmurs heard at different parts of the heart, usually systolic in time, and which are extremely common. Their significance is usually determined by repeated auscultation combined with obser-

vations on the clinical course of the patient, not by resort to instruments of precision.

Auscultation of the heart, we should not forget, gives better evidence for the diagnosis of mitral stenosis, of aortic insufficiency and of the less common lesions than does any instrument of precision. Gallop rhythm is well described as a cry of the heart for help. It is a cry that is heard only with the stethoscope. Pericardial frictions, machine murmurs, the Duroziez murmur, and the Flint murmur, are all phenomena that are heard.

Physical examination is also of great value in certain other heart conditions which are sometimes considered the exclusive preserve of the electrocardiogram. I refer particularly to bundle branch block and coronary occlusion. The diagnosis of bundle branch block can be positively made in many cases only with the electrocardiogram. I should prefer to confirm a tentative diagnosis with an electrocardiogram. In the case of coronary occlusion, however, conditions may be quite different. In many cases the history, the type of pain, a localized area of pericardial friction, and leukocytosis, make the diagnosis fairly certain. If it is convenient to obtain an electrocardiogram on such a patient, it should be done; and if it can be brought to the bedside without a great expenditure of energy, and money, the electrocardiogram should be taken. However, I have on more than one occasion seen a patient transported to the electrocardiograph at some risk to his physical condition, where it would have been far better to have left him alone than to have subjected him to further danger for the purpose of confirming a diagnosis already fairly certain. It should also be remembered that there are silent areas of the heart in which lesions do not give any characteristic electrocardiogram when taken in the usual fashion.

The above remarks are not to be construed as disparaging the electrocardiograph as an instrument. Dr. S. A. Levine, of Boston, who certainly has no reason to be critical of electrocardiography, says: "An able clinician who knows nothing about the string galvanometer, can still do better work than an expert in electrocardiography who has limited bedside experience and inadequate clinical judgment."

In the diagnosis of the anemias and the leukemias, a blood count is usually decisive. The blood counting apparatus is a simple one which is inexpensive and can be easily mastered. Much additional information of value can, however, be obtained by methods even simpler than blood counts. The absence of free hydrochloric acid in the gastric juice of patients suffering from pernicious anemia is, of course, one of the cardinal signs of that disease. Similarly the physician hesitates to diagnose lymphatic leukemia without the enlargement of the lymph glands. In cases of bleeding, a gross examination of the blood will distinguish between hemophilia and thrombopenic purpura. If the blood is collected in a small test tube, the clot of the hemophilic blood is normal in appearance showing characteristic retraction, while the clot in thrombopenic purpura does not retract at all.

Diabetes is a disease, the knowledge of which is in a great measure due to exact laboratory procedure. Much of the information we have could have been obtained in no other way. Yet it is a mistake to think that extremely technical procedures are absolutely necessary for the diagnosis and treatment of a diabetic patient.

The glucose tolerance test, which may be regarded as an exact laboratory procedure, is of great aid in an exceptional case which has been long considered a case of diabetes mellitus, but does not behave as such. In such instances, however, the history should give us the clue and then the test can be carried out in a well-equipped laboratory. The routine of carrying out a glucose tolerance test in every patient with glycosuria is an absolute waste of time, unless the physician is studying some scientific problem connected with sugar metabolism. In most diabetics the history and the demonstration of sugar in the urine clinches the diagnosis. If the blood sugar is high, especially two hours after meals, the diagnosis is fairly certain.

There is one striking phenomenon which is extraordinarily common in diabetics, which cannot be demonstrated by any instrument of precision. I refer to the acetone breath. The ability to smell this peculiar sweetish odor of the breath seems to vary with different physicians but is certainly present in a marked degree to most people. The presence of such a breath in an individual who shows sugar in the urine is rather conclusive evidence that he has diabetes mellitus.

Incidentally, I often wonder if our sense of smell has not undergone considerable atrophy. Jonathan Swift, during his residence in London, wrote a friend that he had a lodging in Bury Street with "a thousand stinks in it." Even allowing for poetic license and admitting that London in the early eighteenth century was an unrivalled training ground for the olfactory nerves, yet we do seem to have forgotten that certain diseases emit distinctive odors. All of us are familiar with the odor of pulmonary gangrene and of a colon bacillus abscess. It should be remembered, however, that several generations of physicians have described the mousy odor in typhus, the sweetish fetid odor of measles, the acid sweaty smell of rheumatic fever and the odors characteristic, but difficult to describe, of diphtheria and smallpox.

The more the physician treats diabetes, the less frequently does he have blood sugar determinations made on patients. They are often of value, but the urine examination is both simpler and more important. It is more important to know whether a patient is secreting sugar during a twenty-four hour period and, if so, how much, than it is to know the exact height of his blood sugar at the precise moment that the blood is drawn. It cannot be emphasized too strongly that the blood sugar has constant, probably minute, variations. A patient may have a high blood sugar every afternoon, and a low or normal blood sugar in the morning before breakfast. In such a patient, if we were to rely entirely on the height of the blood sugar before breakfast, we should think everything was going along nicely. When, however, we examine the twenty-four hour specimen of urine, and should find sugar in it we would know that all is not as well as it seems. Woodyatt showed, many years ago, that it was possible to treat a patient in diabetic coma and rescue him by examining only the urine.

During the past fifteen years, I have seen many diabetic patients who were terribly disturbed because they had a high blood sugar and showed no sugar in the urine. The knowledge that they had a high blood sugar was a very depressing factor in their illness. Such patients often show blood sugar from 200 to 300 every morning and yet never show sugar in the urine. Next to insulin, the best treatment for these patients is the avoidance of blood sugar determinations.

In diseases of the kidney and so-called essential hypertension, blood chemistry studies and delicate functional tests have greatly increased our knowledge of these diseases. They have not, however, fundamentally altered the treatment or made antiquated our methods of diagnosis. In spite of repeated attempts to estimate kidney function by means of a variety of tests, we cannot diagnose a failing kidney until three-fourths of the glomeruli have been destroyed. In the diagnosis of diseases of the kidney the sheet anchors are still the sphygmomanometer and the examination of the urine for albumin and casts. In that interesting disease, known as lipoid nephrosis, these examinations alone are usually sufficient for the diagnosis. Such patients, in spite of marked albuminuria and edema, show a normal blood pressure and a heart of normal size.

The examination of the stools is becoming a lost art, possibly because the physician of today finds the procedure rather disagreeable and imagines that other methods of examining will make up for his negligence in this respect. It should not be forgotten, however, that clay-colored stools still signify obstruction of the bile duct, tarry stools indicate hemorrhage into the gastrointestinal tract, and that bulky,

foamy stools still suggest pancreatic disease.

In 1903 John B. Murphy wrote the following sentences:

"The most characteristic and constant sign of gallbladder hypersensitiveness is the inability of the patient to take a full, deep inspiration when the physician's fingers are hooked up deep beneath the right costal arch below the hepatic margin. The diaphragm forces the liver down until the sensitive gallbladder reaches the examining fingers, when the inspiration suddenly ceases as though it had been shut off. I have never found this sign absent in a calculous or infectious case of gallbladder, or duct disease."

This is just as true today as when he wrote it. It is still true that the majority of the patients having gall stones that give any trouble have tenderness on pressure of the gallbladder. If this tenderness is absent, or has never been present, we may question the necessity of operation, even if the x-ray has demonstrated gall stones.

Palpation and percussion of the abdomen still remain the safest methods of demonstrating enlargement of the liver and the spleen. Demonstration of such enlargement is often of primary importance in diagnosis. Palpation of the abdomen still demonstrates the presence of fluid in the abdomen, just as surely as it ever did. Abdominal palpation continues the most important method of examination in case of suspected appendicitis. In this latter condition even the roentgenologist cannot venture to tread, and if he does, probably wishes he had not. Various abdominal tumors, tumors of the uterus and the ovary and of the rectum, are still and probably always will be diagnosed by palpation.

These remarks that I have made on the subject, "Diagnosing Disease Without Instruments of Precision," do not, I wish to emphasize anew, carry with them any slur upon these instruments. Personally, I employ them every day in my practice. Thousands of physicians do the same.

It is always important to recognize the limits of both physical examinations and instruments of precision.

A colleague of mine a few years ago was very much incensed at the basal metabolic apparatus because it did not tell him which thyroid patients were going to survive operation and which were not; and he was threatening to give up its use altogether. I finally persuaded him not to, by pointing out that the basal metabolic apparatus was not a surgical oracle which answered questions of surgical mortality, but simply an apparatus to do what it was intended to do, namely, to estimate the basal metabolism and nothing else.

There is a great tendency at the present time in medicine to exalt what seems exact, and to cry down what is obviously inexact. No one, however, appreciates the errors and inexactitude of instruments of precision more than those who work much with them. Medicine, we all know, in spite of great advances, is not a very exact science and probably will never be. Although when compared with psychology or with psychoanalysis it may seem extremely exact, yet it is very inexact compared with such sciences as mathematics, and even physics and chemistry. The thought I wish to emphasize is that correct diagnosis is the sum total of all the evidence at hand, and is not, as a rule, obtained from any one method of procedure, even when instruments of precision are employed. Instruments of precision are very desirable and at times very necessary, but thousands of correct diagnoses are made daily and hundreds of thousands of patients are healed without their employment.

During the present emergency we should cultivate, as students and practitioners, simple methods of diagnosis. We cannot be sure that we will always have with us, on land, on sea and in the air, the electrocardiograph, the x-ray and the chemical laboratory. We can, however, be reasonably sure that while we function as physicians, we will be in possession of our five senses. Under such conditions we will realize our helplessness if we have leaned too heavily on instruments of precision in making our diagnoses.

CLINICAL EVALUATION OF AN INTRADERMAL TEST FOR POLIOMYELITIS

CARLOS RAMIREZ, M. D.† *
NEW ORLEANS

We lack any specific diagnostic and practical test for poliomyelitis in any stage of the disease; such a test would be of inestimable value, particularly in the early phases, when accurate diagnosis is of utmost importance. Armstrong, in a symposium presented at Vanderbilt University in 1941, stated: "In spite of repeated trials employing the virus of poliomyelitis, no specific diagnostic test of value has been evolved."

The etiologic agent of poliomyelitis is now generally recognized as a virus. It was not until 1908-1909 that Landsteiner and Popper[3, 4] succeeded in transmitting the disease to monkeys by means of an emulsion of spinal cord obtained from a patient who had died of this disease. The emulsion was sterile to the common culture media for micro-organisms. The disease produced in the monkey was similar clinically and pathologically to human poliomyelitis.

Etiologic agents other than the virus have been suspected, such as the globoid bodies of Flexner and Noguchi[5] and the streptococci of Mathers.[6] However, the virus theory seems most tenable and has been more intensively investigated.

In 1916, Rosenow[1] published a preliminary report on the isolation of pleomorphic cocci related to the etiology of poliomyelitis, and in 1918 he concluded: ". . . The organism here described bears etiologic relationship to poliomyelitis."

In 1935 and 1936, Foshay[7, 8] described a skin reaction obtained with specific antiserum corresponding to the infectious disease of the patient. When approximately 0.03 c. c. of a specific antiserum is injected into the skin of a patient suffering from the corresponding disease, an erythematous and often an edematous reaction is produced, beginning within two to four minutes and reaching its maximum in fifteen to twenty minutes. Foshay differentiated his specific reaction, which he called "E-E reaction", from hypersensitivity to horse serum by the following features: (1) Only the *specific* horse serum against the corresponding disease elicited an early erythema, often with edema; (2) the erythema of the so-called "E-E reaction" appears very promptly, in two to four minutes after injection, and fades sooner than the urticaria produced by normal horse serum in cases of hypersensitivity. The erythema of the "E-E reaction" does not itch and has no pseudopodiae; (3) when patients with the "E-E reaction" and negative hypersensitivity to normal horse serum were given specific serum intravenously, no untoward reactions were observed and further, the "E-E reaction" often could not be reproduced later in the same patient.

Foshay explained these particular skin tests as being due to specific antigen-antibody reactions in the skin. The bacterial antigen is circulating freely during the acute phase of the disease and is therefore present in the skin; when antiserum is injected into the skin, the antigen-antibody mixture produces a reaction. He studied the test in many infectious diseases, but principally in tularemia and brucellosis. Tamura[9] soon reported similar studies in lymphogranuloma inguinale.

In 1937, Rosenow[10, 11] applied Foshay's skin testing procedure to poliomyelitis, using his own poliomyelitis antistreptococcic serum: "The cutaneous test is made by injecting superficially into the epidermis approximately 0.03 c. c. of a 10 per cent saline solution of the wet, centrifuged euglobulin from the serum of horses hyperimmunized to the streptococcus. If the results of the test are positive, an erythematous-edematous reaction occurs almost immediately, which reaches its maximum usually in ten minutes. The area of the reaction is calculated in square centimeters. A greater reaction to the poliomyelitis antistreptococcus than to other antistrepto-

*Commonwealth Fellow in Communicable Diseases.

†From the Department of Pediatrics, Tulane University School of Medicine and the Isolation Unit, Charity Hospital, New Orleans, Louisiana.

coccic serums and normal horse serum is considered positive and indicative of an infection by streptococci antigenically related to the streptococcus of poliomyelitis." Rosenow[12-16] later published several articles confirming his earlier report.

Having explained the type of skin test employed, I shall describe the technic and

TABLE I
SKIN TESTS IN POLIOMYELITIS

Patient	Age	Duration of Disease When Tested	Reaction (sq. cm.) Test	Control	Interpretation*
J. T.	5 yr.	19 days	12.25	2.25	+
		3 mo.	15.7	3	+
N. S.	6 yr.	8 days	9	0.25	+
		3 mo.	6	3	?
K. C.	8 yr.	2 yr.	9	9	0
P. P.	2 yr.	20 days	12.25	1	+
G. M.	3 yr.	49 days	4	0.36	+
C. J.	5 yr.	3 yr.	5.7	0	+
E. B.	22 mo.	51 days	2.25	0	−
J. S.	7 yr.	26 days	9	4	+
		3 mo.	6	2.25	+
W. P.	8 yr.	7 days	12	8.75	0
		2 mo.	2.25	4	−
M. K.	2 yr.	13 days	7.5	1.5	+
		41 days	6.25	0	+
G. C.	8 yr.	4 days	1.5	3	−
		34 days	7.5	6.25	0
F. C.	2 yr.	22 days	4	2.25	0
Y. A.	7 yr.	18 days	19.25	7.5	+
		69 days	7.5	2.25	+
J. L.	17 mo.	39 days	12	6.25	0
		3 mo.	9	7.25	0
B. T.	16 yr.	2 mo.	18	32	0
		113 days	12	17.5	0
S. M.	4 yr.	21 days	6.25	0	+
		73 days	4	0	+
C. T.	12 yr.	39 days	11.25	6.25	0
P. T.	2 yr.	64 days	12	3	+
		117 days	7.50	2.5	+
M. G.	6 mo.	32 days	9	7.5	0
		84 days	6	3	?
B. W.	15 yr.	52 days	14	16	0
		92 days	20	35	0
C. C.	9 yr.	17 days	6	0	+
		57 days	6	4	0
N. L.	14 mo.	15 days	6.25	1	+
		55 days	6.25	0	+

*+ positive. — negative. ? doubtful. 0 useless.

37 reactions:

Resumé

(for cases with poliomyelitis)

Useless and negative: 16 (43.2%)
Positive: 19 (51.9%)
Doubtful: 2 (4.9%)

13 (21 days or less)
Useless and negative: 5 (38.4%)
Positive: 8 (61.6%)

24 (more than 21 days)
Useless and negative: 13 (54.1%)
Positive: 9 (37.5%)
Doubtful: 2 (8.4%)

22 Patients
Negative: 9 (40.9%)
Positive: 10 (45.0%)
Doubtful: 3 (4.1%)

results. The material* consisted of: (1) a 10 per cent solution of euglobulin in saline from the serum of horses which had been hyperimmunized against the poliomyelitis strain of streptococci; (2) normal horse serum similarly diluted. Approximately 0.05 c. c. of the 1:10 dilution of euglobulin was injected intradermally into the upper part of the forearm and an equal amount of dilute normal horse serum into the lower part. The test was read in ten minutes. The maximal diameters of erythema were measured and evaluated in square centimeters. The reactions were classified in the following manner. A *positive reaction* was one whose erythematous area was greater than 3 sq. cm. and whose control showed less than one-half this area. A *negative test* was one in which the area of erythema measured less than 3 sq. cm. A *doubtful test* was one in which the area of erythema was 3 sq. cm. or more but the control site showed half as much reaction. A *useless test* was one in which the area of erythema was greater than 3 sq. cm. but whose control was larger than half this area.

Twenty-one cases of typical poliomyelitis were tested, with a total of 37 reactions (table 1). Sixteen reactions, or 43.2 per cent, were useless or negative (13 useless and three negative) 19, or 51.9 per cent, were positive; and two, or 4.9 per cent, were doubtful. Thirteen of the 37 tests were made within 21 days of the onset of

*Furnished through the courtesy of Eli Lilly and Company.

the disease; five (38.4 per cent) of these were useless or negative and eight (61.6 per cent) were positive. Of the 24 tests done *after* 21 days following the onset, 13 (54.1 per cent) were useless or negative, nine (37.5 per cent) were positive, and two (8.4 per cent) were doubtful.

Seventeen tests were done in 16 patients with various other infectious diseases (table 2); seven (41.8 per cent) of these were

TABLE II
SKIN TESTS IN MISCELLANEOUS CONDITIONS

Patient	Age	Time After Onset	Reaction (sq. cm.) Test	Control	Interpretation
J. W.	3 yr.	13 days	8	4.5	0
D. E.	4 yr.	3 days	4.5	1	+
J. H. M.	11 mo.	57 days	8	8	0
J. T.	15 yr.	2 days	17.50	0	+
J. C.	19 mo.	12 days	5	1	+
H. P.	32 yr.	7 days	6	3	?
L. M.	9 yr.	8 days	12	6	?
B. B.	10 yr.	18 days	9	4	+
E. R.	10 yr.	4 days	9	2.25	+
S. P.	53 yr.	?	12	15	0
I. W.	40 yr.	3 days	12.25	14	0
I. W.	10 yr.	3 days	14	1.5	+
M. W.	10 yr.	7 days	7.5	14	0
N. W.	2 yr.	7 days	14	12.5	0
H. B.	7 yr.	26 days	8.75	0	+
		79 days	22.5	22.5	–
C. B.	3 yr.	36 days	12.25	2.25	+

Resumé

17 reactions, 16 cases:

Useless: 7 cases (41.2%)
Positive: 8 cases (47.0%)
Doubtful: 2 cases (11.8%)

useless, eight (47 per cent) were positive, and two (11.8 per cent) were doubtful. Of the 16 normal controls (table 3), 14 (87.5 per cent) were positive and eight (12.5 per cent) were useless.

On the basis of this study, it seems apparent that Rosenow's skin test for poliomyelitis has no positive diagnostic value and that the negative reaction is not reliable for the exclusion of poliomyelitis.

SUMMARY

This paper deals with an evaluation of Rosenow's experiments on skin testing for poliomyelitis with the poliomyelitis antistreptococcic serum. Although the number of cases studied is relatively small and will require further additions at a later date, it appears that the test lacks specificity and therefore has little if any diagnostic value.

TABLE III
SKIN TESTS IN NORMAL CONTROLS

Patient	Test	Control	Interpretation
A. Babies 6 months to 2 years with no history of previous disease. Reaction (sq. cm.)			
L. R.	5	1.44	+
O. P.	6	2.25	+
G. A.	5	3	0
S. J.	14	5	+
D. R.	9	3	+
L. L.	10.50	5	+
S. D.	7.50	3	+
F. J.	10.50	1.50	+
B. Healthy medical students: no history of poliomyelitis*			
C. R.	7.50	0	+
E. C.	10	0	+
R. B.	7.70	0	+
N. B.	7.50	0	+
C. B.	13.50	0	+
H. B.	5	0	+
H. C.	12	0	+
B. B.	15.75	8.75	0

*Failure to elicit a history of poliomyelitis (or known contact) of course has little, if any, value in excluding "subclinical infection" and consequent acquired immunity. This feature of poliomyelitis only serves to reduce further the diagnostic value of such a skin test.

TABLE IV
SUMMARY: EVALUATION OF SKIN TESTS CARRIED OUT IN THIS STUDY

	Negative or Useless Per cent	Positive Per cent	Doubtful Per cent
Poliomyelitis	43.2	51.9	4.9
Under 21 days	38.4	61.6	
Over 21 days	54.1	37.5	8.4
Miscellaneous Diseases	41.2	47.0	11.8
"Normals"			
Well babies	12.5	87.5	
Medical students	12.5	87.5	

REFERENCES

1. Rosenow, E. C., Towne, E. B., and Wheeler, G. W.: The etiology of epidemic poliomyelitis: preliminary report, J. A. M. A., 67:1202, 1910.

2. Rosenow, E. C., and Wheeler, G. W.: Etiology of epidemic poliomyelitis, J. Infect. Dis., 22:281, 1918.

3. Landsteiner, K., and Popper, E.: Mikroskpische praparate von einen menschlichen und zewi affenrucken mar ken, Wien Klin. Schnschr., 21:1830, 1908.

4. Landsteiner, K., and Popper, E.: Ubertragung der

poliomyelitis acuta auf affen, Ztschr. f. immunitatsforsch u. exper. Therap., Orig., 2:377, 1909.

5. Flexner, S., and Noguchi, H.: Experiments on the cultivation of the virus of poliomyelitis, J. A. M. A., 60:362, 1913.

6. Mathers, G.: Some bacteriologic observations on epidemic poliomyelitis, J. A. M. A., 67:1019, 1916.

7. Foshay, Lee: Intradermal antiserum tests: A bacterial-specific response not dependent upon serum sensitization but often confused with it, J. Allergy, 6:360, 1935.

8. Foshay, Lee: The nature of the bacterial-specific intradermal antiserum reaction, J. Infect. Dis., 59:330, 1936.

9. Tamura, J. T.: Rapid presumptive diagnosis of lymphogranuloma inguinale: a specific intradermal test with antilymphogranuloma inguinale goat serum, J. Lab. and Clin. Md., 21:842, 1936.

10. Heilman, F. R., and Rosenow, E. C.: Newer methods of study and treatment of chronic streptococcal disease, Proc. Staff Meet. Mayo Clin., 12:252, 1937.

11. Rosenow, E. C.: Precipitin and cutaneous streptococcal antibody-antigen reactions in poliomyelitis, Proc. Staff Meet. Mayo Clin, 12:531, 1937.

12. Rosenow, E. C.: The early diagnosis and treatment of poliomyelitis with poliomyelitis antistreptococci serum, Ill., Med. J., 76:144, 1939.

13. Rosenow, E. C.: Application of a cutaneous test in relation to acute sporadic and epidemic poliomyelitis, Proc. Staff Meet. Mayo Clin., 14:734, 1939.

14. Rosenow, E. C.: Specific streptococcal antibody-antigen reaction of the skin and serum of monkeys during attacks of experimental poliomyelitis, Proc. Staff Meet. Mayo Clin., 15:382, 1940.

15. Rosenow, E. C.: A diagnostic cutaneous reaction in acute poliomyelitis, Proc. Staff Meet. Mayo Clin., 18:118, 1943.

16. Rosenow, E. C.: Streptococcic antibody-antigen reactions of the serum and skin of monkeys during attacks of experimental poliomyelitis, Proc. Staff Meet. Mayo Clin., 18:205, 1943.

PNEUMOPERITONEUM IN THE TREATMENT OF PULMONARY TUBERCULOSIS

REPORT OF A PATIENT SUCCESSFULLY TREATED

B. M. STUART, M. D.†
R. L. PULLEN, M. D.†
AND
J. L. WILSON, M. D.†
NEW ORLEANS

Pneumoperitoneum has been used since the turn of the century in the treatment of tuberculous enteritis and peritonitis and as an aid in gynecologic diagnosis. However, no mention was made in the literature of its use in treating pulmonary tuberculosis until 1930 when Vadja[1] first reported the use of pneumoperitoneum to elevate the diaphragms of patients with pulmonary tuberculosis. Since that time, many workers[2, 3, 4] have observed the use of pneumoperitoneum alone as well as a supplementary measure in patients with phrenic paralysis.[5, 6, 7, 8] More recently, the use of pneumoperitoneum to supplement successive bilateral phrenicectomy has been reported.[9]

Though defined poorly, several generally accepted indications for pneumoperitoneum in the treatment of pulmonary tuberculosis are: (1) bilateral tuberculosis that has not responded to other forms of conservative treatment such as pneumothorax or phrenic nerve interruption; (2) pulmonary hemorrhage not controlled by other methods; (3) pulmonary tuberculosis considered too extensive for bilateral pneumothorax or other collapse therapy; (4) adjunctive therapy in those patients in whom pneumothorax has been abandoned, the lung has re-expanded, and additional treatment is considered advisable; (5) to supplement interruption of the phrenic nerve; and (6) palliative treatment for far advanced cases.

The rationale of pneumoperitoneum in the treatment of pulmonary tuberculosis is based upon the following changes that have been observed: (1) lymph stasis and subsequent fibrosis of the lung parenchyma; (2) pulmonary congestion resulting in anoxemia unfavorable for the growth and dissemination of the aerobic tubercle bacilli; (3) reduction in chest capacity amounting to 15 to 35 per cent resulting from the decreased vertical length of the lung;[10] (4) decreased movement and relaxation of diseased tissues favoring collapse of tuberculous cavities and exudative lesions; and (5) diminution of the toxic manifestations of the disease as a result of more effective pulmonary drainage.

As a method of treatment of pulmonary tuberculosis, pneumoperitoneum possesses certain advantages: (1) pneumoperitoneum is reversible and may be discontinued at any time; (2) pulmonary relaxation is gradual so that sudden reduction of vital capacity does not occur; (3) some relaxation or "splinting" of the good lung occurs which may diminish contralateral bronchogenic spread of the disease; and (4) coughing and

†From the Department of Medicine, Tulane University of Louisiana School of Medicine, and Charity Hospital of Louisiana at New Orleans.

expectoration are facilitated. However, the following complications have been observed following pneumoperitoneum: air embolism;[7, 11] peritoneal effusion;[10] mediastinal emphysema; perforation of the diaphragm and resulting pneumothorax;[12] scrotal pneumocele; and hemorrhage from the deep epigastric artery and other blood vessels. As a result, the following contraindications to pneumoperitoneum are accepted generally: (1) diaphragm fixed with adhesions on the diseased side; (2) coronary artery disease; (3) amyloidosis; (4) cardiac decompensation; (5) generalized arteriosclerosis; and (6) failure to try first the standard procedures of collapsing the lung when these procedures are not contraindicated.

That pneumoperitoneum does not effect any untoward local pathologic responses has been substantiated by autopsy studies[15] revealing no reaction of the peritoneum in 75 per cent and low grade inflammatory changes possibly due to the pneumoperitoneum in only 10 per cent. Ascites was observed usually in those patients with tuberculous peritonitis. With increasing duration of therapy, however, a tendency for gradual thickening of the peritoneum was noticed.

The authors employ the following technic for pneumoperitoneum: A point on the anterior abdominal wall 4 or 5 cm. below the umbilicus and just lateral to the rectus muscle is selected, prepared in the usual manner, and anesthetized with 1 per cent procaine solution. A 22-gauge infiltration needle may be used for anesthetization of the peritoneum. For the injection of the air an ordinary pneumothorax needle is satisfactory. It is desirable to attach this needle to a 2 c. c. syringe partially filled with procaine solution for insertion into the abdominal wall. As soon as the needle is introduced into the peritoneal cavity, the fluid in the syringe flows freely into the peritoneal cavity, and this phenomenon indicates to the operator that the peritoneal cavity has been gained. A standard pneumothorax apparatus with manometer is then connected to the needle. Ordinarily no manometer readings are possible at this time until considerable air has been injected. If a sudden positive pressure following the injection of a few cubic centimeters of air is observed, the needle probably has not penetrated the peritoneum. The authors usually introduce 500 to 1,000 c. c. of air on the initial injection. The amount of air and the frequency of injections must, however, be adapted to the individual case.

The authors have observed certain, rather constant clinical features following pneumoperitoneum: sense of fullness or tightness in the epigastrium; dull, aching pain in one or both shoulders and in the back of the neck; disappearance of the liver dulness to percussion; and diminished capacity for food.

Electrocardiographic changes following pneumoperitoneum have been reported by Elwood, Piltz and Potter[16] to include deviation of electrical axis to the left with elevation of both hemidiaphragms without phrenic paralysis. Changes in those patients with right phrenic nerve block in addition to the pneumoperitoneum resulted in deviation of the electrical axis to the right, with definite decrease in any left axis deviation which may have been present previously. Electrocardiographic studies on patients with left phrenicectomy in addition to pneumoperitoneum revealed marked left axis deviation particularly if the phrenic nerve interruption resulted in considerable rise of the diaphragm. After resorption of air and regeneration of the nerves, the anatomic and electrical axes of the heart were restored.

CASE REPORT

This 26 year old, white female was admitted to the tuberculosis unit of Charity Hospital on February 24, 1940, complaining of a persistent cough for five months which was relatively non-productive. Physical examination revealed a well nourished, well developed white woman of the stated age. The only pertinent findings were rales in both apices, more predominant on the left. Laboratory data revealed a sedimentation rate of 24 mm. in one hour (normal 18 mm.), 12,200 white blood cells, of which the differential smear disclosed 70 per cent polymorphonuclear leukocytes, 28 per cent lymphocytes, 2 per cent monocytes. Hemoglobin was 80 per cent of normal. Blood serology was negative. Urinalysis was negative. Intra-

dermal tuberculin test was positive to 1:10,000 O. T. The sputum was negative for tubercle bacilli but they were found in the gastric washings. Vital capacity was 1,600 c. c. A roentgenogram of the chest (fig. 1) was made on March 4, 1940, which showed a clearly outlined cavity 3.5 cm. in diameter just beneath the left clavicle with some surrounding infiltration and a small amount of infiltration in the first and second interspaces anteriorly on the right side. Left pneumothorax was attempted unsuccessfully on the left side on March 14, 1940. On March 26, 1940, the left phrenic nerve was crushed. On April 17, 1940, the vital capacity measured 1,350 c. c. Fluoroscopic examination revealed that the left diaphragm was motionless and that no appreciable rise had been obtained. The cavity persisted. On December 31, 1940, the left phrenic nerve was crushed again. On May 18, 1941, pneumoperitoneum was initiated, 350 c. c. of air being introduced initially. After seven refills of 500-1,000 c. c. of air, the patient was placed on a bimonthly schedule, 1,000-1,500 c. c. of air being given each time. In February of 1942, she was discharged from the hospital. Treatment was continued in the clinic.

During treatment, the left diaphragm rose to the third rib anteriorly and the right diaphragm rose to the fourth interspace anteriorly (fig. 2). The pneumoperitoneum was abandoned on January 4, 1943, a total of forty-two refills having been given.

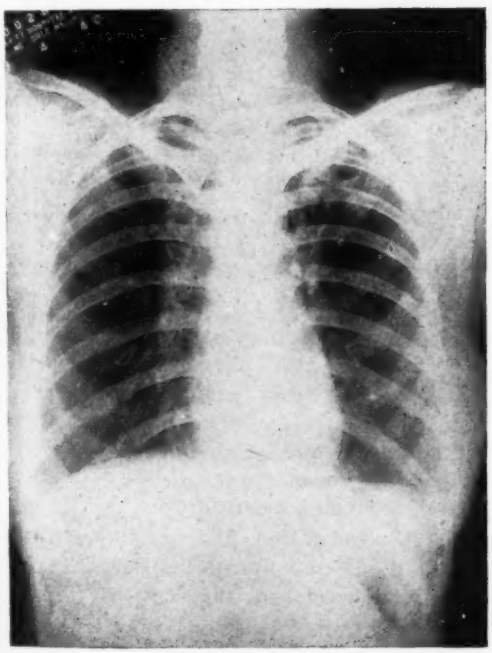


Fig. 1. Roentgenogram of patient on admission to hospital.

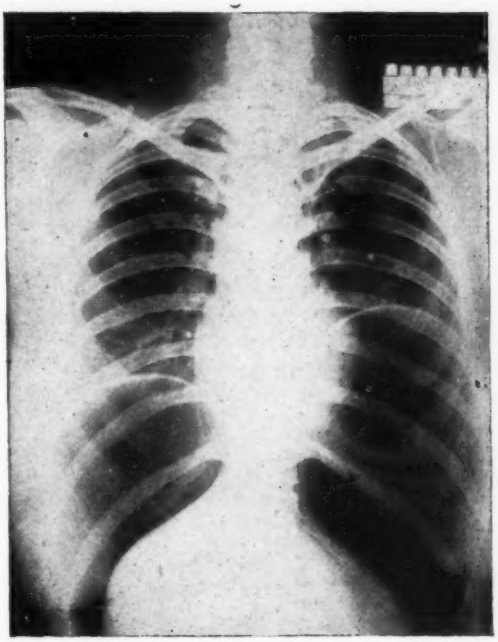


Fig. 2. Roentgenogram showing elevation of both diaphragms by the pneumoperitoneum and collapse of the cavity in the apex of the left lung.

At that time, the patient did not produce any sputum, her weight was stationary, and there were no clinical symptoms. She was working regularly.

The patient has been seen in the clinic regularly up to the present date. Although the left diaphragm is still slightly elevated, she has had no clinical symptoms to date. On recent roentgenograms, there is no evidence of cavitation and the parenchymal involvement has improved remarkably (fig. 3).

DISCUSSION

This case has been presented as evidence that the treatment of pulmonary tuberculosis with pneumoperitoneum supplementing phrenicectomy may be successful. Many of the cases reported in the literature have been far advanced cases of pulmonary tuberculosis in which pneumoperitoneum was induced as a palliative procedure in the terminal stages of the disease. For that reason pneumoperitoneum has been considered unfavorably by many as a therapeutic procedure.

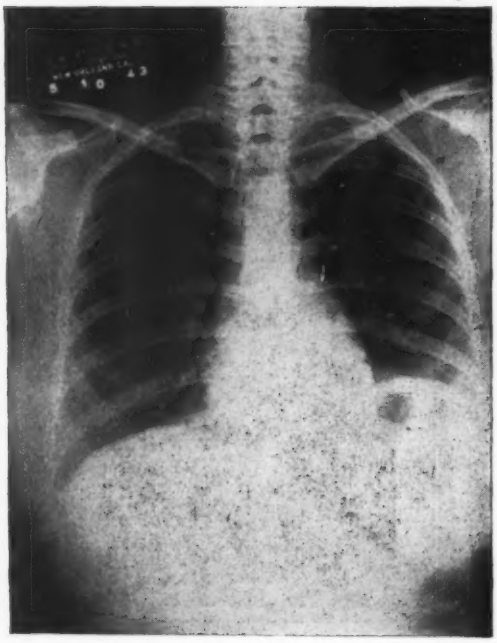


Fig. 3. Roentgenogram after the pneumoperitoneum had been discontinued. The lungs appear remarkably clear.

SUMMARY

In unilateral cases of pulmonary tuberculosis in which pneumothorax cannot be instituted, pneumoperitoneum and phrenic nerve interruption may produce sufficient immobilization and collapse of the lung to enable the acute processes to subside. Exudative lesions and thin-walled cavities may respond satisfactorily to this form of treatment. Such responses may obviate future surgical procedures such as thoracoplasty.

REFERENCES

1. Vadja, L.: Ztschr. f. Tuberk, 67:391, 1930.
2. Banyai, A. L.: Therapeutic pneumoperitoneum, Am. Rev. Tuberc., 29:603, 1934.
3. McIntyre, J. P.: Artificial pneumoperitoneum applied to certain therapeutic problems in pulmonary tuberculosis, Edinburgh M. J., 47:688, 1940.
4. Hobby, A. W.: Pneumoperitoneum, J. M. A. Georgia, 28:160, 1939.
5. Joannides, M., and Schlack, O. C.: Use of phrenic neurectomy combined with artificial pneumoperitoneum for collapse of adherent tuberculous lung, J. Thoracic Surg., 6:219, 1936.
6. Trimble, H. G., and Waldrip, B. G.: Pneumoperitoneum in treatment of pulmonary tuberculosis, Am. Rev. Tuberc., 36:115, 1937.
7. Fremmel, F.: Phrenicectomy reinforced by pneumoperitoneum, Am. Rev. Tuberc., 36:490, 1937.
8. Banyai, A. L.: Mechanical effect of artificial pneumoperitoneum and phrenic nerve block, Arch. Surg., 38:149, 1939.
9. Bryan, E. C., and Ricen, E.: Surgical treatment of pulmonary tuberculosis, United States Naval Med. Bull., 38:553, 1940.
10. Woodford, L. G.: Pneumoperitoneum with phrenic paralysis, Dis. of Chest, 8:298, 1942.
11. Warring, F. C., Jr., and Thomas, R. M.: Spontaneous air embolism, Am. Rev. Tuberc., 42:682, 1940.
12. Mellies, C. J.: Pneumoperitoneum (with unusual complication), J. Missouri M. A., 36:431, 1939.
13. Monts, R. W., and Bradford, H. A.: Scrotal pneumocele, Am. Rev. Tuberc, 47:538, 1943.
14. Banyai, A. L.: Pneumoperitoneum, Dis. of Chest, 3:9, 1937.
15. Trimble, H. G., Eaton, J. L., and Moore, G.: Pneumoperitoneum in the treatment of pulmonary tuberculosis (local effects on peritoneum), Am. Rev. Tuberc, 39:529, 1939.
16. Elwood, B. J., Piltz, G. F., and Potter, B. P.: Electrocardiographic observations on pneumoperitoneum, Am. Heart J., 19:206, 1940.

THE PHYSIOLOGIC AND CLINICAL PHENOMENA OF AGING*

ERNST P. BOAS, M. D.
NEW YORK CITY

I am sure that before this audience I need not elaborate on the growing numbers of elderly persons in the population of the United States. Today there are actually 6,000,000 more persons who are 65 years of age or older in the United States than there were in 1900; and it is estimated that by 1980 the total number in this age group will be 22,000,000. With this change in the age distribution of our patients there is an accompanying change in the nature of the diseases from which they suffer. The increased span of life is due in large measure to the remarkable diminution in the frequency of infectious diseases. Today the chronic so-called degenerative diseases are responsible for three-quarters of all deaths.

Thus it becomes important that we recognize this shift in the phenomena of disease and equip ourselves to cope with it. These changes are as significant in preventive medicine as they are for the treatment of the sick. In former years the public health officer confined his activities to sanitation, mosquito eradication and suppression of epidemic diseases and mass vaccination. These methods do not serve in the control

*Read before the Eighth Annual Meeting of the New Orleans Graduate Medical Assembly, March 6-9, 1944.

of cancer, heart diseases and rheumatism. The health officer who is beginning to undertake responsibility for the control of some of these chronic diseases is working out a new approach. He realizes that these diseases must be recognized in their incipiency, and that complete treatment must be made available as soon as they are discovered. So he has become interested in health examinations, in clinics and hospitals where diagnostic and therapeutic measures can be carried out. The wiser among the health officers have recognized that in the control of these chronic diseases the practicing physician is the first line of defense. It is he who must try to keep his patients well, who must recognize deviations from the normal at the earliest possible moment, and who must see to it that proper treatment is carried out. Certainly for the elderly and the aged, the general practitioner is the key health officer of the community.

Treatment of the aged has two aspects—the treatment of the aging person, and the treatment of disease in the aged. Treatment of the aging person demands knowledge of the normal processes of senescence, of the changes in function and structure that come with the years, and of the manner in which they modify the potentialities for living. The diseases that we encounter in the aged are the same diseases that we see in younger persons, but often their manifestations are somewhat different in the aged, for the aging body reacts differently to the noxious processes.

Most of the diseases of the aging organism are popularly considered and termed degenerative diseases. This implies that the disease is due to the gradual wearing out of the several tissues of the body, that the disease is in essence evidence of aging; that it is an inevitable process of senescence. Were this so, we would have to accept the invalidism of aging as part of our inescapable heritage, and consider medicine as powerless to halt its progress, or to restore the worn out dying organism.

The distinction between aging and disease is not a purely academic one. If, for instance, we regard arteriosclerosis solely as a phenomenon of aging, a process that inevitably makes its appearance in the aging arteries of every person, we may well throw up our hands in the conviction that treatment is futile, research fruitless. If we regard arteriosclerosis as a disease process, that manifests itself with particular frequency in older persons, we will strive to discover its causes and marshall in its therapy all of the knowledge and methods that we have at our disposal. There is much evidence to prove that arteriosclerosis, as encountered as a cause of disease among our patients, is not a simple senescent process, but a pathologic one that may eventually be brought under control. So it is with many of the other disabilities of the aged.

It is important to reach a common understanding of the nature of the aging process. Most people think of aging as a terminal event; as a running down or wearing out of the organism; as a final tissue and organ deterioration preceding death. This is an incorrect concept. Aging is but a part of the whole cycle of life. Growth, differentiation, involution are but different phases of the life curve, manifesting themselves at different rates in different structures of the body. The milk teeth become loosened and are cast off in childhood, the thymus gland atrophies in early life, the ductus arteriosus closes shortly after birth. Yet these phenomena result from processes no different from those that cause similar organ changes in the aged. All of the phenomena of aging do not appear simultaneously. In the same individual graying of the hair, far sightedness, loss of elasticity of the skin, or of the arteries, decalcification of the bones occur at different ages; and among different individuals there is the greatest variation in the time of occurrence of these so-called stigmata of aging. When we speak of senescence, and aging of the organism we arbitrarily segregate the anatomic and physiologic phenomena observed in older individuals and assign to them attributes of degeneration of the organism due to aging. Aging and death may result from wear and tear of the organism due to external insults; it may result from the accumulation

of inhibiting substances within the organism; it may result from a diminution or gradual extinction of the original vital force.

It has been shown experimentally that each organ and tissue has its own time curve of aging, and that this time curve depends on three factors: heredity, the external environment, and the internal environment of the body. The most important of these three elements is heredity. Strains of mice can be inbred so that aging occurs uniformly in all individuals of that strain. Furthermore, it has been shown that, comparing different strains of mice, the anatomic changes occurring in the several organs are strain characteristics in their time of occurrence, that is, that various organs age at different rates in different strains of mice. The same phenomenon is observed in man. Longevity is primarily a family characteristic. Early greying of the hair or early hypertension or coronary artery sclerosis are family traits. Aging is primarily a constitutional phenomenon hereditarily determined.

It has often been suggested that hormones, particularly the sex hormones, may control the aging process. Many have claimed that the menopause marks the first sign of aging in women and that there is a similar climacteric in men. Both clinical and experimental studies give no support to this view. The menopause is characterized by a diminished secretion of estrogens, and an increase in the urinary gonadotropins, by vasomotor disturbances—the well known hot flushes, with headache, dizziness, by psychic changes and by "rheumatic pains." Men give no manifestations of a similar abrupt climacteric. There is no sudden decrease in the androgens, although in the later years of life smaller quantities of androgens are excreted. Yet some aged men have a high titer of urinary androgens. There is no significant elevation of gonadotropins in the urine of aging men, nor do they suffer from hot flushes or other symptoms of the menopause. Men who suddenly lose their testicular function as a result of castration or disease do undergo a climacteric-like state. They have vasomotor disturbances, and an increase in urinary gonadotropins. Experimental studies have shown that several internal secretory glands may accelerate or retard the time curves of involution of various organs but that primarily the effects depend on inherited characteristics. There is no master hormone controlling senescence.

All structural changes found in the aged are not signs of senescence. The older the person, the greater his years of exposure to external insults, and the greater the possibility that his body will show scars of these encounters. A generation ago, when tuberculosis was far more widespread than it is today, almost every adult, at autopsy, gave evidence by the scarring of his lungs that he had undergone a tuberculous infection. These scars were not manifestations of aging, but aged individuals, because of years of exposure to tuberculous infection, almost universally had been infected at some time.

Often it is difficult to distinguish between phenomena of pure senescence and those of superimposed disease—a disease process whose development may be favored by the aging of the tissues. Fractures of the hip, through the neck of the femur, are very common in old persons. The bone has become rarified and brittle, the aged person has lost some of his resiliency, balance and coordination, so that he falls more easily, and the weakened bone breaks more readily. Although aging plays its part, the actual fracture is an accident, it does not connote aging. Similar considerations apply to the so-called hypostatic pneumonias of the aged. Loss of elasticity of the lungs, rigidity of the thoracic cage, diminished excursion of the diaphragm, all presumably favor the collection of secretion in the lungs and prevent the expulsion of this material when it becomes infected. The element of infection, however, is an accident, not a manifestation of aging.

The human changes most characteristic of aging, bodily changes that are accepted, in the popular mind, too, as evidence of senescence are: loss in height, loss in weight, presbyopia, deafness for high tones,

graying of the hair, loss of elasticity of the skin. None of these alterations of the structure and texture of the body are regarded as disease processes, none of them challenge the continuance of life.

It has repeatedly been pointed out that natural death, death from natural decay, or from true senility, occurs very rarely in man. Autopsies on old people always reveal a patholgic cause of death, thought no symptoms were observable during life. The most common causes of death in persons over 65 years of age are: arteriosclerosis of the coronary, cerebral or peripheral arteries, hypertension, carcinoma of the gastrointestinal tract, prostatic hypertrophy, tuberculosis and street accidents.

Some very practical considerations can be derived from a contemplation of these facts. The physician must always be on the alert to distinguish between disease and aging in dealing with older patients. He must not carelessly ascribe their symptoms and disabilities to the running down of their bodies. At the same time he must become fully aware of the physical and mental changes that take place in the aging organism, and learn how involutional alterations in the structure and function of the body may affect and alter the manifestations of disease. The physician diagnoses disease as it appears in the human body, he is concerned largely with the reaction of the body to disease. He treats not a disease, but a sick person.

Disability and illness, no matter at what age they occur, whether in infancy or in the ninth decade, must be regarded as results of disease, a challenge to the diagnostic and therapeutic art of medicine. Only with such an attitude can knowledge advance; only with such an approach can we hope to control and prevent many of the chronic diseases of advancing years that are, as yet, incompletely understood.

With increasing age of the organism there is a progressive dehydration of the tissues with a reduction of intracellular fluid, the colloidal systems undergo alterations, elastic tissue loses its elasticity. Some of the outward manifestations of the underlying chemical changes in the body contribute to the characteristic stigmata of aging. Chief among these are loss of weight and stature. The back becomes bowed with a gentle kyphosis. The skin atrophies and becomes thinned, the subcutaneous fat disappears, there is loss of elastic tissue, and the skin becomes dry and wrinkled. There is atrophy of the hair and sweat follicles. The hair turns gray and falls out. The teeth become loosened and are gradually lost.

Changes in the eyes are characteristic. Diminution of orbital fat leads to enophthalmos, loss of tone in the muscles and skin causes drooping of the eyelids, both features combined contributing greatly to the facies of aged persons. Arcus senilis, although not confined to the aged, is common in elderly individuals. Finally presbyopia, loss of accommodation, is one of the most definite evidences of aging. Careful statistical study has shown a genuine correlation between the age of onset of presbyopia and length of life.

Impairment of hearing, particularly for high tones, begins at age 50 and slowly progresses. It is due to simple atrophy of the nerve and the end-organ in the cochlea, and is an almost universal accompaniment of aging.

Parallel with these changes that are discernible by the layman, and that together constitute the picture of the aged person, there are analogous changes in the internal organs.

The changes in structure and function of the heart and arteries that come with age are few and simple and do not give rise to clinical syndromes of disease, nor do they lead directly to death. The concept is erroneous that diseases of the heart and arteries at ages past 50 are inevitable manifestations of the aging process, that they are unavoidable and incurable. The important senescent changes in the heart are: pigmentation of the heart muscle fibers, atrophy of the heart muscle, enlargement of the valvular ostia and stretching and loss in elasticity of the valves. The electrocardiogram of the aged has no characteristics that distinguish it from that of younger

persons. There is an increasing tendency to left axis deviation, an increase in the relative duration of systole and a lessened frequency of sinus irregularity. Prolongation of the PR interval is common. Studies have shown that about one-quarter of persons over the age of 70, who are presumably normal, have electrocardiograms indicative of myocardial damage. These abnormal electrocardiograms, however, are evidence of arteriosclerotic myocardial disease, not of aging.

The arteries and veins become elongated and dilated from progressive deterioration of their elastic tissue, and there is some thickening of the intima. Simple intimal thickening is evidently a physiological process, for it begins in the first years of life and occurs regularly in all but the smallest muscular arteries. Thickening of the intima after the fourth decade is due to increase of collagenous tissue, and shows fatty, hyaline and calcific changes as well. It gives rise to the typical picture of arteriosclerosis.

All the evidence indicates that arteriosclerosis is not a simple wearing out of the arterial coats that comes with age, but that it is a disease; a disease, it is true, that manifests itself, mainly, but by no means exclusively, during the period of senescence. It remains a challenge to scientific investigation and a problem for constructive therapy.

Changes in function of the heart and arteries occur with advancing years. The pulse rate remains fairly constant until about age 65, when it tends to increase to a slight degree. The cardiac output, measured under basal conditions, declines very slightly in old age. This results largely from the lessened oxygen consumption of the body.

The idea that with increasing age there is a progressive rise in blood pressure still finds general acceptance. The term hypertension is employed far too loosely. True arterial hypertension, which so commonly leads to cardiovascular disease, is characterized by an elevation of both systolic and diastolic pressures. Systolic hypertension, without rise in diastolic pressure, has an altogether different mechanism and is the result, not the cause, of cardiovascular disturbances. The common form of hypertension met with in the aged is a systolic hypertension. In the later decades of life the systolic blood pressure may rise to about 140 or 160 mm. of mercury, while the diastolic pressure remains unaltered. This systolic hypertension and increase in pulse pressure is not caused by narrowing of the peripheral arterial bed and does not place an added strain on the heart and arteries; it is the result of the loss of elasticity and the increased atherosclerosis and rigidity of the aorta and large arteries. The increasing length and width of the aorta and large arteries compensate for their loss of elasticity and help to keep the internal tension of the aortic wall constant. The increase in systolic pressure in the aged is an expression of loss of arterial elasticity, and in its effect on cardiovascular dynamics is a beneficent reaction.

In their totality, these changes of the organism lead to changes in function. When he is at rest, or under no great physical strain the bodily functions of the aged person are normal. The temperature of the body, the level of sugar and other chemical constituents of the blood, the cardiac output, the respiratory exchange, the kidney function all compare favorably to similar functions in youth. But as soon as the aging body is exposed to unusual or greater strain, we find that the range of response of the various organs is curtailed, and that the power of self-regulation of the body to maintain a constant internal environment, the function that Cannon calls homeostasis, is lost. An aged person does not tolerate excessive cold or heat, he cannot adapt himself to extreme environments. His heart functions well when little demand is made upon it, but it cannot respond to the load of greater exertion. So it is with all of the bodily functions. With age the bodily reserves are encroached on more and more and gradually the physical limitations placed on the body greatly limit its range of response and its capabilities. Whereas

the young person can abuse his body, and overtax his strength with little deleterious results, such efforts in the aged soon lead to disaster.

The process of repair of tissues after injury is altered in the aging organism.

With progressing age there is a gradual change in the natural resistance of the body to infection. Pathologic changes in various organs, that become increasingly frequent with advancing years, bring about a lessened local or organ resistance to infection. Thus pulmonary emphysema favors the development of bronchitis and bronchopneumonia, prostatic enlargement, or large cystoceles allow of ready infection of the bladder, circulatory impairment in the extremities often leads to serious infection and gangrene.

In treating aging persons, the physician must give constant consideration to the loss of youthful resiliency and adaptability of their tissues and organs, and to their progressively lessened range of response to the calls made on them by the demands of daily living. The young person can abuse his body almost with impunity; he can exercise to complete fatigue, he can permit himself excesses in eating and drinking, he can smoke too much, he can go without sleep. His recuperative powers are great, and rarely does he do himself permanent damage. But when middle age is passed, the body can no longer adapt itself so readily to such extreme stresses; soon some structure or function gives way and leads to the beginning of disease. Thus, with advancing years, the individual must learn his gradually increasing limitations, and arrange his living so that he does not overtax the weakening organism. Here again one must try to strike the balance between the maintenance of physical fitness, and excesses that lead to overstrain.

With advancing years, and the accompanying lowering in the basal metabolic rate, and lessened physical activity the caloric needs diminish. Absolute figures cannot be set down for each age group, but the principle is clear that with advancing years and diminished activity the food intake must be cut down. Most persons past age 70 who live very quiet lives should consume between 1500 and 1800 calories. The protein intake should be reduced in proportion to the caloric intake. Thus a 1500 calorie diet should contain about 45 grams of protein.

Experimental studies in nutrition have demonstrated an intimate relationship between the qualitative composition of the diet and health. They have shown that inadequate diets may cause disease, and that the duration of life of individual animals, and the health of successive generations can be affected at will by alterations in the diet. One must distinguish between a minimum adequate diet and an optimum diet.

The results of inadequate dietaries may be very slowly cumulative and may not become apparent for many years. Many of the manifestations of aging and disease in older persons, that today are accepted as inevitable results of senescence, may well be the result of life-long faulty dietaries. The ordinary American diet is more deficient in calcium than in any other element. As a result adults experience steady long continued loss of calcium through the years. This does not become superficially manifest because the great calcium stores in the bones constantly make up for the calcium losses in the blood and tissues. But as a result of this constant depletion the bones become poor in calcium and more fragile. The osteoporosis of the aged may well be a result of a dietary fault, and not an inevitable accompaniment of aging. An intake of almost one gram of calcium a day is needed to maintain the calcium balance of the body. The best sources of this mineral are milk which contains about one gram to the quart, cheese and green leafy vegetables.

Snapper has pointed out that arteriosclerosis occurs very rarely in northern China, in spite of the fact that diabetes is very common. He suggests that fundamental differences in dietaries may underly this phenomenon. The Chinese diet contains only small amounts of cholesterol but

considerable quantities of unsaturated fatty acids, especially of linoleic and linolenic acid. He states that the average cholesterol content of the blood of Chinese is lower than that of Westerners, and suggests that this may account for the lessened incidence of lipoid infiltration of the arterial wall among the Chinese.

As yet no knowledge exists of a specific relationship between individual vitamins and aging, but in the light of experimental work it is evident that the provision of an adequate supply of vitamins throughout life will help to maintain health, and probably postpone some of the disabilities that come with advancing years. Physicians have learned to recognize some of the more extreme manifestations of vitamin deficiencies, and have become aware that vitamin lack may cause disease under unexpected circumstances. It is not at all unreasonable to suppose that many of the lesser disturbances that develop with the years are ascribable to dietary deficiencies. Some of the mental disturbances of the aged are pellagra-like and can be cured by the administration of nicotinic acid. Often a primary disease, such as a heart disease will interfere with the appetite and with the absorption of food, so that secondary symptoms due to dietary deficiencies become manifest. In older persons, too, we may encounter dietary fads and idiosyncracies that lead to disease.

Cheilosis, the macerated lesion at the angles of the mouth, has been repeatedly described in recent years as pathognomonic for riboflavin deficiency. Recently it has been shown that this lesion in older persons is often due to ill-fitting artificial dentures with too short a vertical dimension, causing the upper lip to overhang the lower. This allows the saliva to escape at the angle of the mouth and creates a moist pocket where fungi and bacteria grow on the epithelial debris.

With age there is a slow decrement in all of the functions and in the psychologic reactions of the body. There is impairment of bodily strength, of swiftness and exactness of motion. But there is great variability in the time of appearance of these changes, and many a superior oldster may in these functions excel the average younger individual. There is a general belief that old persons have lost the faculty of learning new disciplines and new procedures, that they are resistant to new ideas. Psychologic studies have thrown doubt on this view and many believe that the educatability of a person does not necessarily decline with age. The liberalism or conservatism of their outlook on life are determinants as important as their chronologic age. Certainly wisdom, a function involving experience and judgment is preserved in age.

Impairment of memory is universally accepted as a stigma of aging. Memory is a function of attention. The physical weakness of the aged, and the assumption by society that they are no longer useful leads to a sense of inadequacy, and to a withdrawal of attention. Lack of memory thus is often actually lack of attention. Older people are more conservative than the young; they resist changes in their mode of life, they resist new ideas in manners and morals. Again this is not necessarily the result of senile changes in their brains and modes of thought, but may result from the sense of inadequacy which their insecure position in society impresses on them, which gives the old person an emotional need for an unchanged world. Many of the mental and emotional changes manifested in elderly persons are due less to aging and regression of their mental faculties, than to the kind of life forced on them by a heedless society. Lawton has pointed out that economic and social insecurity play a large part in hastening mental deterioration in older persons. A man who has worked most of his life, who has supported and brought up a family, who has regarded himself, if he ever gave thought to the matter, as a useful member of society is suddenly without work and without income for reasons of age alone. In spite of his best efforts, current concepts and customs make it impossible for him to obtain employment and maintain his in-

dependence. He becomes dependent on his children or on society. He learns that he has no further function in life, yet instinctively he clings to life. Is it not to be expected that this change in his status, forced on him by the workings of the culture of the society within which he lives, rather than by any cause residing within himself, should color his mental and emotional reactions? And since this same pattern is repeated in multitudes of members of our society, and since they react in similar ways, the unwarranted conclusion has been drawn that many of the mental and emotional characteristics of the aged are caused by intrinsic biologic changes, instead of recognizing that they are the result of external conditions imposed on them by the cultural pattern of the society within which they live. The validity of this view is strengthened by the repeated observation of intellectual vigor, and emotional balance in individuals who have passed the eighth decade of life, and who because of certain fortunate circumstances are enabled to continue lives of financial independence, and intellectual or creative productivity.

I have discussed some of the important phenomena of senescence and have tried to distinguish them from disease in old age. Such knowledge is basic to scientific, clinical, and social study of our aging population.

THE BLOOD SUPPLY OF THE STERNUM*

I. X-RAY STUDIES OF INJECTED STERNUMS SHOWING VENOUS RETURN

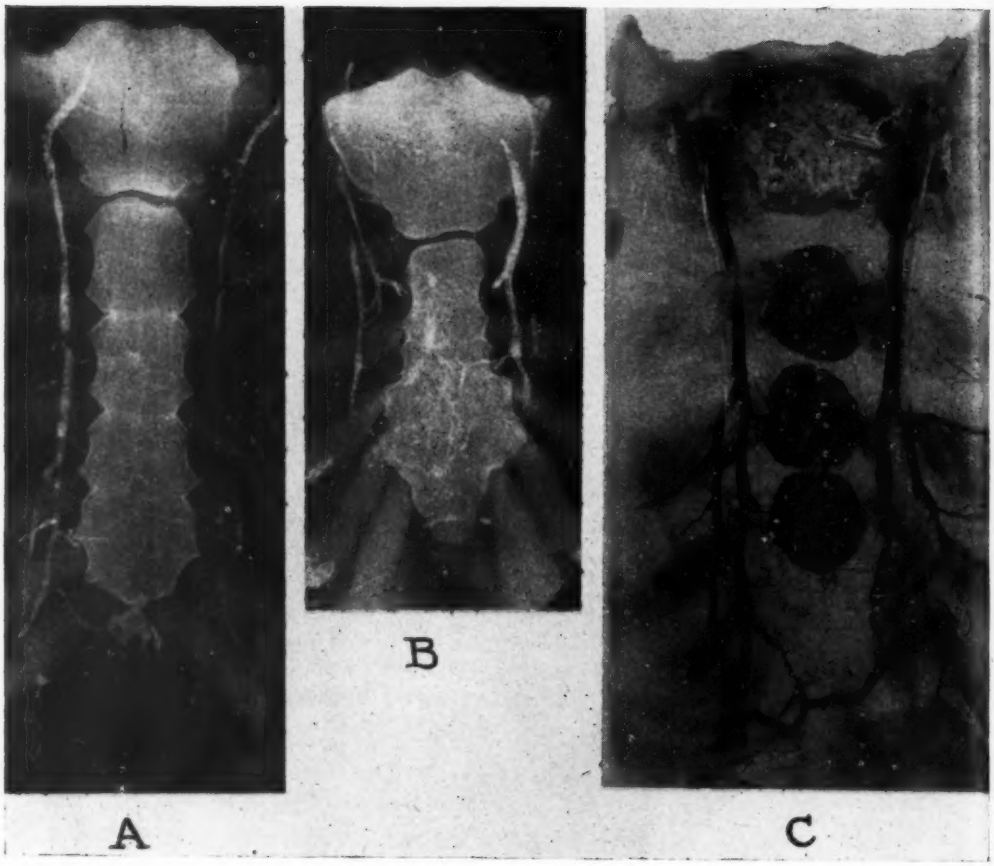
PHILIP PIZZOLATO, M. D.†
NEW ORLEANS

Because of the recent interest in the establishment of the marrow cavities as a new route for parenteral therapy and the use of marrow for diagnosis, we have undertaken to investigate the intricacies of the blood supply of the sternum. Tocantins[1] in 1940 demonstrated that blood, glucose and saline solutions could be introduced into the medullary cavities of man and rabbits without difficulty. He also injected mercury into the marrow cavity and recorded the venous outflow by x-ray photographs. Disadvantages in the use of mercury are that it frequently becomes dislodged from the injected site and is easily attacked by acids used in the decalcification of bones. Benda[2] injected radio-opaque substances into the sternum of living patients but the method was not entirely successful because the medium escaped into the general circulation before satisfactory roentgenograms were obtained.

In our studies we used 5 per cent ferric ferrocyanide and lead chromate as blue and yellow pigments, in a 20 per cent vinylite solution in acetone; the lead compound being more opaque to x-ray, whereas the blue mixture is excellent for translucent preparation. In these photographs injections were made in the manubrium and in various portions of the body of the sternum, one to five cubic centimeters of the mixture being injected in each site. The medium flowed with slight difficulty and soon entered the sternal tributaries of the mammary vein. The bones were x-rayed and then cleared in oil of wintergreen. Figure 1 C shows the sternum of a seven year old boy which was injected in the middle of the body and in the manubrium and then cleared. The medium has entered the surrounding venules and the sternal tributaries of the mammary veins. Figures 1 A and B show an opaque material in the manubrium and in various portions of the sternum, as well as in the mammary vein. Finer details of the venous outflow were noted in the cleared preparations. We were unable to find any sternums as pictured by Tocantins in which

†From the Division of Hematology, Department of Pathology, Charity Hospital of Louisiana at New Orleans, and the Department of Pathology and Bacteriology of the Louisiana State University School of Medicine, New Orleans, Louisiana.

*Presented before the American Federation of Clinical Research on March 28, 1944, at Louisiana State University School of Medicine, New Orleans, Louisiana.



large blood vessels ran through the body. However, we did find in our observation of the adult a few large branches anastomosing at the lower portion of the sternum, and in children, small branches connecting one center of ossification with another.

REFERENCES

1. Tocantins, L. M.: Rapid absorption of substances injected into the bone marrow, Proc. Soc. Exper. Biol. & Med., 45:292, 1940.

2. Benda, R., Orinstein, E., and Depitre: Injections intramedullaires osseuses de substances opaques chez l'homme, Sang. 14:172, 1940.

CLINICO-PATHOLOGIC CONFERENCE

CHARITY HOSPITAL

CASE HISTORY

J. M., a colored male, aged 6 months, was admitted April 18, 1944 and died April 27, 1944.

C. C.: Jaundice, painful left side, fever.

P. I.: On April 17 (day before admission), the mother first noted that her infant was jaundiced and was passing white stools and dark urine. The infant seemed feverish, but no temperature measurement was made. There was apparent tenderness on the left side of the abdomen.

P. H.: Patient was born prematurely at Charity Hospital on October 23, 1943, after an eight month primiparous gestation. Birth weight was 4 pounds, 6 ounces. There were no abnormalities of delivery or of neonatal period. Physical examination disclosed an inguinal hernia.

The mother was found to be syphilitic shortly before delivery; no antiluetic treatment had been given. In spite of repeated clinical evaluation, bone x-rays, and serologies, no evidence of syphilis was found in the infant.

During the second week of life, the infant's abdomen suddenly became distended, due to mechanical bowel obstruction resulting from a strangulated inguinal hernia. At laparotomy a gangrenous section of small bowel incarcerated in the inguinal sac made it necessary to resect 6 cm. of

ileum and to perform a double-barreled ileostomy. The infant survived a stormy postoperative course, after which the spur was finally clamped, and on the tenth postoperative day feces passed through the anus. Three weeks after laparotomy, the colostomy was closed. At five months of age, the infant's hernia was repaired, and he was discharged on April 5, 1944, weighing 9 pounds.

No other abnormalities were noted at the time of laparotomy, nor were there any episodes of bleeding during the entire first period of hospitalization. The usual neonatal jaundice was in no way complicated or prolonged.

P. E.: T. 97.6° (R), P. 120, R. 62. Wt. 10½ pounds, head circumference 37 cm., length 57 cm. The infant appeared fairly well nourished but fretful. Moderate postural deformities of the head were present. There was evident icterus of skin and sclerae. Examination of the chest disclosed somewhat noisy respirations, slight retraction of the thoracic soft parts, and occasional scattered coarse rales. The abdomen was moderately distended, but there was no apparent bowel obstruction. Palpation of the left upper quadrant elicited tenderness; the spleen was not palpable. A non-tender liver could be felt 1 cm. below the right costal margin. There was a well healed right hernioplasty scar.

Laboratory: Hgb. 55 per cent (Sahli), RBC 4,200,000, WBC 12,500; differential: 39 per cent neutrophils, 2 per cent immatures, 4 per cent eosinophils, 1 per cent basophils, 5 per cent monocytes, and 49 per cent lymphocytes. A sickling preparation was negative. Corrected sedimentation rate was found to be 1 mm. Bleeding time was 14 minutes, clotting time six minutes, and prothrombin time failed to show a clot in 30 minutes. On April 24, after daily parenteral administration of vitamin K, the bleeding time was 11 minutes, clotting time 4 minutes, and blood prothrombin concentration 100 per cent of normal.

Three urinalyses showed traces of reducing substance. Bile was found in the first two specimens but not in the last (on April 26). Qualitative tests for urobilinogen were negative.

Bile could not be found in a clay-colored stool on admission nor in a yellow sample on April 26, but occult blood was present in the feces on this date. Rectal swab culture for typhoid and dysentery organisms was negative.

The serum proteins were 8.3 gm. per cent on admission, van den Bergh 13.1 units (direct). Cephalin-cholesterol emulsion showed a 3 to 4+ flocculation. Kline and Kolmer were negative on two occasions during this admission. Mantoux (0.1 mg.) was positive; Schick equivocal.

X-rays of the bones were within normal limits.

Course: Synthetic vitamin K (2 mg.) was given intramuscularly twice daily up to death. The infant was not transfused. His urine remained consistently orange-yellow. On the day after admission, his stools became yellow.

On April 21, the infant became restless, irritable, and feverish, his evening temperature reaching 102.2°. The fever had subsided by the afternoon of the next day; the infant again appeared to be fairly well.

On April 26, streaks of bright blood were seen in the stool; by that afternoon the stool was black, giving a positive test for occult blood. By evening the stools were again yellow.

On April 27, at 10:30 a. m., an unsuccessful attempt was made to draw blood from the jugular vein. The infant's rectal temperature was then 98.6°. Immediately thereafter he was carried from the ninth floor to Delgado Amphitheatre. On his return to the ninth floor about noon he was found to be cold, clammy, and cyanotic, with irregular respirations. His temperature was now 95.8°. Oxygen inhalations were begun. By 2 p. m., respiration had ceased. Resuscitation was unsuccessful.

Dr. Hill: This colored male, six months of age, developed jaundice, pale stools, dark urine, and left abdominal tenderness just the day before admission. This questionable history is the only information available.

The mother had been found to be syphilitic shortly before the premature delivery of this infant but had received no treatment during this, her first pregnancy. We examined the infant repeatedly, and there were never any physical, serologic, or roentgenologic evidences of syphilis found.

During the second week of life, he was transferred to the Surgical Department for relief of a strangulated inguinal hernia; operative procedures will be described by the surgical resident. The patient was discharged at the age of five months, just three weeks before returning for this second admission. We understand that during the various operations, there were no associated abnormalities noted, and there were no apparent bleeding tendencies.

At the time of his second admission, there was slight tenderness in the left upper quadrant of the abdomen, but there was no evidence of bowel obstruction and no true muscle spasm. This tenderness disappeared during the first day in the hospital. From the history and physical findings alone, no diagnosis could be established. Luetic hepa-

titis was most strongly considered, though subsequent studies and clinical course seemed to exclude this possibility.

The sedimentation rate was normal. In spite of parenteral administration of vitamin K, the bleeding time remained prolonged while the prothrombin and clotting times returned to normal levels. Examination of the urine and stool suggested that the jaundice was of the obstructive or regurgitative type. Kline and Kolmer tests were negative on two separate occasions during this last admission. Aside from a slight elevation of temperature on the fourth hospital day, the child's course was afebrile, and he appeared quite well until the final dramatic episode, to be discussed later.

There was a small amount of gross blood in the stool on the ninth day after admission, at which time the prothrombin and clotting times were normal, though the bleeding time was still prolonged.

Two hours before death a venepuncture was done; during the next hour he was taken to a surgical conference for discussion of the results of the earlier bowel resection. When returned to the ward, he was in extremis, apparently in a state of shock, cold, clammy, cyanotic, and with marked respiratory difficulty. In spite of efforts at resuscitation, he expired.

It seems obvious that the infant had some sort of obstructive or regurgitative jaundice. Most of the laboratory procedures were not repeated for confirmation, so we must accept the results of single examinations. What are the possible causes of such jaundice in an infant of this age?

Acute yellow atrophy should be ruled out by the benign course until the day of death. This condition produces prolonged bleeding, clotting, and prothrombin times, but the relatively benign course, meager gastrointestinal and cerebral symptoms, together with the response of prothrombin to parenteral vitamin K all argue against such a diagnosis. Furthermore, there seemed to be no toxic or infectious basis discoverable in the history.

Acute catarrhal jaundice is rare in infants, and absence of even mild gastrointestinal symptoms in this condition would be unusual. The prolonged bleeding time does not fit very well. In view of the hemorrhagic manifestations, Weil's disease or other types of infectious hepatitis should be considered. These, however, usually have marked constitutional symptoms, and this child did not exhibit high fever, prostration, myalgia, or conjunctival hyperemia.

Cirrhosis, though extremely rare at this age, could be suspected from the presence of hemorrhages, although the acute onset and lack of evidences of portal hypertension make it unlikely.

Regardless of the fact that we could demonstrate no objective evidence of syphilis in this particular infant, we still have to consider luetic hepatitis, particularly on the basis of the maternal status and our knowledge that syphilitic hepatitis, although frequent as a pathologic finding, often produces bizarre and atypical clinical manifestations. Jaundice is usually absent or minimal in luetic hepatitis in infancy. Liver abscess seems unlikely in view of the normal sedimentation rate and leukocyte count. Poisons could be considered, but no suspicion is raised by the history and no toxicologic examination was made.

Is it possible that adhesions following the earlier operative procedures could obstruct the common bile duct? Certainly this is not an example of congenital atresia, since the jaundice did not appear until the sixth month, whereas in atresia it becomes increasingly severe after the second or third week. Enlargement of lymph nodes adjacent to the common bile duct due to syphilis, tuberculosis, or neoplasm should be considered, and parasites have been known to ascend and occlude the biliary system. One feature which speaks strongly against a purely obstructive jaundice is the elevation of cephalin-cholesterol flocculation test; a 2 to 4 plus reaction has been found in no more than 5 per cent of such cases and then is usually associated with hepatic damage.

Cholecystitis and cholelithiasis are very

unusual in infancy, and hydatid cyst of the liver also seems adequately excluded by its rarity; primary carcinoma of the liver in infants does not produce jaundice but usually only asymmetric hepatic enlargement due to the tumor mass.

Independent of these considerations of liver pathology, there are certainly many other possibilities. There are two periods in the child's life when peptic ulcer is likely to occur: in the newborn with sepsis and during later childhood. It has also been reported to occur in severe hepatitis. The reasons for the occurrence of ulcers in these situations is not clearly understood. Aside from its rarity, peptic ulcer in childhood is frequently asymptomatic and extremely atypical in its manifestations. It usually produces only gastrointestinal hemorrhage or perforation. The total duration of life following a rupture of such an ulcer is rarely longer than 24 to 36 hours. Occasionally, ulcers are found in association with congenital anomalies of the intestinal tract. One such case was reported with severe ulceration appearing in the stoma of a blind ileal pouch; this same thing might possibly occur with a Meckel's diverticulum.

Thrombocytopenic purpura should have been considered, particularly when the prolonged bleeding time persisted after correction of the prothrombin deficiency. In this condition, sudden hemorrhages, particularly intracranial, can occur to explain such a dramatic terminal episode as this baby exhibited. Hemorrhage, however, would not produce these evidences of obstructive jaundice but rather would present features suggesting hemolytic types. This infant was not transfused as he should have been, had thrombocytopenic purpura been considered.

After our last conference dealing with miliary tuberculosis, we cannot afford to overlook this infant's positive Mantoux reaction.

What relation did jugular puncture have to the terminal episode? Is it possible that the vein was entered and allowed to bleed into the mediastinum? Is it possible that sudden death was caused by a massive pneumothorax, produced by tearing the dome of the pleura? What happened in the hour following this manipulation?

Summing up, the most likely possibility is that this infant had an acute hepatitis of unrecognized cause. It is entirely possible that the jaundice could have been due to a benign process, such as acute catarrhal jaundice, and therefore not a direct cause of death. Ulceration of the intestinal tract is extremely likely but so is mediastinal hemorrhage and massive pneumothorax.

Dr. Platou: We have said repeatedly that there is never any harm in "waiting for proof" before instituting therapy in congenital syphilis, and this case illustrates that point nicely. Consider what a problem we would have had today if we had assumed this infant to be congenitally syphilitic and had administered three or four injections of an arsenical drug! As you know, there were never any cutaneous, mucosal, serologic, or x-ray evidences of syphilis in this baby. I would be very surprised if the pathologists are able to demonstrate any lesion attributable to this disease. Someone might say that this could be an example of congenital syphilis destined to present the first objective manifestations later in childhood; even so, specific treatment could not be justified during either of these periods of hospitalization.

What happened during the last hour of life? Perhaps the student who told me there were significant physical findings appearing during this time would be willing to supplement the record in this regard. Is that student present.

Student: When I examined the patient, the abdomen was markedly distended; I could not palpate the organs. I did not take the temperature. Respirations were about 50, pulse was over 150, and the child was in bad shape.

Dr. Platou: I think the immediate cause of death was a perforation, not pleural or mediastinal, but intestinal. The jaundice may have been contributory in some way to a perforated peptic ulcer or there may be an ulcer lower in the intestinal tract, perhaps at the site of the previous anastomosis. At any rate, the student's

finding of marked abdominal distention may support our feeling that the terminal episode was caused by a fulminating peritonitis.

There is a valuable lesson to be learned here; repeated injections of vitamin K were given over a period of four days because of prolonged bleeding and clotting times, with an inadequate prothrombin level. We have pointed out time and again that one should never rely on vitamin K alone to control hemorrhagic manifestations. Vitamin K may correct one deficit in the bleeding mechanism and one only. There are, as you know, many other causes of hemorrhage besides prothrombin deficiency. This infant should certainly have had several small transfusions in addition to the vitamin K which was given. A prolongation of bleeding time persisting after correction of prothrombin level should have made the indication for transfusion absolute. We regret that no platelet count was made, and the retraction of the clot was not observed; these determinations would have been very helpful.

I should like to call on the representative of the Surgical Division to give us some information concerning the earlier operative procedures.

Dr. Joseph Morris: I can give you some facts about the first hospital admission. When he was 13 days old, he started vomiting and we noticed that his abdomen was distended. Twenty-four hours later, Dr. Martin, our chief resident at the time, was called to see him. There was a hard mass in the right inguinal region. He was operated upon for a strangulated inguinal hernia. A loop of ileum about 8 cm. long was found in the hernial sac, and there were two small perforations in this segment. It was hard to decide what to do because enterostomy is known to be universally fatal in infants, but having nothing else to do, we did that. On the third postoperative day we clamped the spur with hemostats, hoping to prevent death from loss of fluid. Three days later, it was seen that the gut containing the spur had prolapsed after the hemostats were removed. I further aggravated this by trying to see how deep the spur was and separated the two segments of bowel near the site of enterostomy. We thought the child would surely die then, but Dr. Martin put two more hemostats on, and we fastened the handles to a splint to prevent prolapse of the gut. After three more days, these came off; the pressure dressing was applied to divert the fecal stream into its normal channels, and the patient started having bowel movements. It was necessary to give blood and fluids by vein.

Three weeks after operation, we tried to close the enterostomy opening, but it broke down later. A dressing was applied to hold it in position, and it closed spontaneously. When the patient weighed nine pounds at five months, his hernia was repaired, and the gut was entered again inadvertently. It took about three hours to repair the hernia.

The baby weighed only four pounds at birth but was nine months gestation. His hernia was repaired, and he had an uneventful recovery.

I do not know who did the venepuncture. I did not notice that the abdomen was distended (as the student stated) but I did not examine him. The jaundice was not as marked as it had been on admission.

Dr. Dieter: Was there any history of drug administration?

Dr. Stark: No. There is a lot of mystery connected with this case, and I am afraid some will remain after we show the organs. Dr. Hill has diagnosed this case properly. One point raised in the clinical history was what happened during the last few hours of this child's life. After seeing the pathology, it is still a mystery to me how he appeared so well up to the time of death. At autopsy we found that he had a peptic ulcer which had ruptured and caused a diffuse peritonitis. It is hard for me to imagine that such a condition would have given rise to symptoms only in the last hour of life. It must have taken a day or more for this peritonitis to develop. There was an episode of sudden pain and restlessness and fever about six days before death, but it is hardly

possible that the child could have lived all these days with a ruptured ulcer. So we have to put the time in the last twenty-four hours. There were no marked adhesions in the peritoneal cavity.

So much for the immediate cause of death. As an incidental finding, there is a diverticulum of the stomach near the cardia about 1 cm. in diameter. I doubt if such a similar diverticulum in the duodenum was the cause of rupture.

We can dispense with the rest of the organs quickly. The heart, lungs, spleen, and kidneys showed nothing remarkable. The lungs showed a few hemorrhages and one small infarct, a few areas of bronchopneumonia, but I do not attribute more than secondary importance to them. As far as the jugular puncture is concerned, there was nothing suspicious in the neck to indicate hemorrhage or pneumothorax. The organs of the neck were dissected and showed no obstruction to the respiratory tract. We can explain death adequately on other grounds.

The specimens from the operative site should be of great interest to you. The cecum and ascending colon and the pouch formed by the anastomosis between two loops of the ileum were found to be normal; there were some adhesions surrounding this area. As far as we can tell, the operation was a complete success in reestablishing continuity of the bowel.

Now we come to the biliary tract. The conclusion was drawn that either obstruction to the biliary outflow had been present, or massive liver damage had occurred. We can safely say there was no obstruction to the bile duct, because at autopsy we could squeeze bile from the bile duct into the duodenum without difficulty. As far as intrahepatic obstruction is concerned, it is a little more difficult to demonstrate. However, we found no dilatation of the large intrahepatic bile ducts which would be expected in obstruction of longer standing.

The gross specimen shows the liver to be apparently of normal size and outline. There are two changes, however: the greenish color of the liver, leaving only parts of the right lobe a brownish-red, and the slight hardening of the liver, and the fine granulation of the surface (resembling Morocco leather). This picture on gross examination resembles that found in biliary cirrhosis. However, on microscopic examination, we found that biliary cirrhosis would not cover the entire pathologic picture, and if we had put this in a definite category, I would classify it as subacute necrosis or hepatitis. As for the cause, I do not know what it is.

Some of the causes of liver necrosis are known. I am happy that this child did not have arsenicals because it would have made our problem even more difficult. We can at least rule this out. We also know that this patient did not have poisoning from chloroform, phosphorous, and other "liver poisons."

We think the nutritional element may enter into the explanation. From recent experimental work on nutritional factors, it is reported that protein deficiency can produce liver necrosis, which is associated with cirrhotic changes in those cases which recover. This is of course experimental, so we cannot draw any definite conclusions. However, an infant who underwent a major operation probably had a nutritional deficiency as a result of the prolonged illness.

Another consideration is the possible toxic absorption from the scrotal abscess. We do know that bacterial toxins can produce liver damage.

SLIDES

Although the underlying pathology is massive, widespread liver necrosis of a subacute nature, the cause of death was peritonitis due to rupture of the peptic ulcer. One thought I can leave with you is that there may be some connection between the two since from experimental studies, tying off of the bile duct of dogs causes bile retention followed in a high percentage by duodenal ulcers. The greatest number of these dogs die of ruptured ulcer. One series of clinical cases has been reported in which there was a relationship between biliary obstruction and formation of duodenal ulcers.

Dr. Hill: A diagnosis of duodenal ulcer in childhood is difficult because it is based largely on suspicion instead of knowledge. In older children there is symptomatology similar to that in adults, but not in younger age groups. Most cases in young children begin with severe hemorrhage, and perforation, and the prognosis is bad; they usually die in 24 to 36 hours. Since no one can prove me wrong, I am willing to guess that this child, in the absence of the ulcer, might have lived longer because of the response of the prothrombin time to vitamin K. The advantage of the cephalin-cholesterol test is evident in differentiating obstructive from regurgitative jaundice. The feeding, I believe, was quite satisfactory, since he was on the regular diet provided for prematures, and did well.

Dr. Platou: There are two questions I should like to ask. Was there any demonstrable lesion of primary tuberculosis to explain the positive Mantoux, and was there any ulceration in the lower intestinal tract to explain the blood-streaked stool?

Dr. Stark: The answer to both questions is "no." There was no evidence of tuberculosis in the lungs or tracheobronchial lymph nodes, but lesions, if present, might have been so small that careful serial sectioning of the lungs would be required to exclude their presence.

Dr. Hill's Diagnosis:

(1) Prematurity.

(2) Incarcerated inguinal hernia (postoperative).

(3) Postoperative scrotal abscess.

(4) Hepatitis, etiology unknown.

(5) Peptic ulcer with perforation and general peritonitis.

Anatomic Diagnosis:

(1) Peptic ulcer, duodenal, with perforation.

(2) Generalized peritonitis.

(3) Toxic necrosis of liver (subacute yellow atrophy).

NEW ORLEANS
Medical and Surgical Journal

Established 1844

Published by the Louisiana State Medical Society under the jurisdiction of the following named Journal Committee:

Val H. Fuchs, M. D., Ex officio

For two years: G. C. Anderson, M. D., Chairman
Leon J. Menville, M. D.

For one year: J. K. Howles, M. D., Vice-Chairman

For three years: C. Grenes Cole, M. D., Secretary
E. L. Leckert, M. D.

EDITORIAL STAFF

John H. Musser, M. D.....*Editor-in-Chief*
Willard R. Wirth, M. D.....*Editor*
Daniel J. Murphy, M. D.....*Associate Editor*

COLLABORATORS—COUNCILORS

Edwin L. Zander, M. D.
J. T. O'Ferrall, M. D.
Guy R. Jones, M. D.
T. B. Tooke, Sr., M. D.
George Wright, M. D.
W. E. Barker, Jr., M. D.
C. A. Martin, M. D.
W. F. Couvillion, M. D.

Paul T. Talbot, M. D.....*General Manager*
1430 Tulane Avenue

SUBSCRIPTION TERMS: $3.00 per year in advance, postage paid, for the United States; $3.50 per year for all foreign countries belonging to the Postal Union.

News material for publication should be received not later than the eighteenth of the month preceding publication. Orders for reprints must be sent in duplicate when returning galley proof.

Manuscripts should be addressed to the Editor, 1430 Tulane Avenue, New Orleans, La.

THE JOURNAL *does not hold itself responsible for statements made by any contributor.*

MEDICINE AND THE GOVERNMENT

As could be anticipated the profound economic and sociologic changes that are taking place as result of the war have and will affect the medical profession in the future. At the present time there have been passed several important bills which have a direct bearing on medical practice. Just recently the Service Men's Readjustment Act, colloquially spoken of as the GI Bill of Rights, was passed by Congress. This particular Act will add materially to the cost of Government but even this eventuality should not be considered with dismay by the average taxpayer. After all the men who have gone into the armed forces have done so at a very considerable sacrifice, a sacrifice which might entail the loss of life or permanent injury, not to mention the disruption of the civilian status of the individual. Physicians, because of the great need of doctors, have entered the Army and the Navy in numbers greater than any other profession or business. Forty per cent of doctors of this country are now engaged in war work. Under the provisions of the GI Bill of Rights these doctors will be given the opportunity of taking additional training and additional courses which might be spoken of as refresher or re-training courses. The Government will not only give these special courses but is prepared to finance extensive training of the young man under 25 years of age whose education was impeded or delayed, interrupted or interferred with as a result of the war. Refresher courses are for only one year. The latter training is for a period permitting a man to complete his education in college or professional school. The time permitted has a direct bearing on the length of service of the veteran. In addition to paying the ordinary expenses of training, a small allowance will be given for subsistence, and books and other equipment necessary for training will also be paid for.

One good feature of the Service Men's Readjustment Act has to do with financing the young doctor who is just starting out in the practice of medicine or as a matter of fact to a limited extent any physician. The amount of money loaned to each physician will not be great, a maximum of $2000 which may be enough to tide over the returning medical man until he gets on his financial feet. Of course special provisions are made for a man who has been wounded or has a disability which is service connected.

Another bill which has very definite implications in the future of medicine is the Public Health Service Act. One of the important provisions in this is to increase the grants-in-aid made to the states under title VI of the Social Security Act. Part

of these funds are to be spent upon prevention of and controlling the spread of tuberculosis. It is recognized that tuberculosis is an extremely difficult disease to control without a central authority. States such as Louisiana which have an excellent State Board of Health, have already provided for a tuberculosis division in their state set-up. The effectiveness of these divisions in different states vary very materially, some are good, some are bad and some are non-existent. It is to assist the states in establishing and maintaining control measures of this disease that this United States Public Health Service will be a real aid, particularly to the backward states and those that are financially unable to do much about the problems of tuberculosis.

Tuberculosis has been for many years now a quasi-public health disease. The campaign against tuberculosis has been fought by both lay and organized medical activities. There is no doubt but that they have done a fine piece of work, part of it from the enthusiasm and willingness of certain groups to assist the physicians in their efforts to control the disease. It is to be wondered whether or not the enthusiasm and the interest of these groups will not be lost when monies are to be provided by taxation for the purpose of controlling the spread of tuberculosis. What has been accomplished in the last three decades is remarkable. Whether through the instrumentality of the Government greater gains will be made remains to be proved.

There can be no doubt but that every physician will approve of the GI Bill of Rights. Some will approve and many will disapprove of the further extension of Governmental services, putting another finger in the medical pie, but to a man the medical profession will continue to protest the incorporation of the Children's Bureau in the Department of Labor, with its bureaucracy, false sentimentality and lack of concern about the individual physician. A long bow was drawn when medical care of children was placed in the Department of Labor. If we are to have modified and magnified bureaucratic medicine, why not put all medical activities in the hands of the Public Health Service, or better still why not have, as the House of Delegates of the American Medical Association has repeatedly petitioned Congress, a Department of Health in which the various health activities would be taken out of this or that department and put into the department that has no relationship whatever to anything except medicine? As the Government is now set-up half a dozen different departments come in contact with one doctor and his activities. They should be amalgamated and put under the direct supervision of a physician.

OUR MEDICAL DEBT TO FRANCE

Under this heading Dr. Guy Hinsdale* points out that the physicians of America owe much to French scientists and doctors who have lived in the last five hundred years. The names of many of these great French scientists and physicians are known to all doctors: Pasteur, Laennec and Claude Bernard are outstanding examples but there are others whose names are less familiar but who have done much for medicine, both by their writings, and by their teachings to students of the United States who have studied and worked under them.

Ambroise Pare, Desault, Corvisart and Dupuytren were some of the earliest of French physicians who enriched medical knowledge. Larry invented the mobile military hospital. Pinel introduced kind and gentle treatment of the insane in place of the barbaric methods that had been employed previously. Andral was an outstanding pathologist and Baudelocque invented the pelvimeter and improved the obstetrics forceps. Mme. Boivin stressed the dangers of forceps causing puerperal fever. Louis was a great internist whose "Researches on Typhoid Fever" brought to him as students many Americans who subsequently became distinguished in the field of medicine.

Trousseau and Dieulafoy were both great teachers, the latter the author of a textbook

*Hinsdale, Guy: Our medical debt to France. Ann. Med. Hist., 14:154, 1942.

which went through fifteen editions and was translated into English. Laveran, who died only a few years ago, discovered the parasites of malaria and for which research he received the Nobel prize in 1902. Widal is so well known as the discoverer of the agglutination reaction that occurs in typhoid fever that his name needs no introduction. Charcot was one of the greatest neurologists of any time. Broca's name is known to every one who studies the anatomy of the brain.

Magendi and Claude Bernard can be listed among the great physiologists of the past whose scientific contributions have helped to make medicine what it is today. Brown-Sequard was a conspicuous neurophysiologist.

In the field of tuberculosis, Laennec was followed by outstanding students of this disease, Davaine, Villemin, and Calmette, amongst others. To the Curies the patient with carcinoma cured by radium owes everlasting gratitude.

Eponyms indicating the importance of the observations and studies of these distinguished Frenchmen are in daily use: Meniere's disease, Raynaud's disease, Duchenne's paralysis, Charcot's joint, Landry's paralysis, Huchard's disease, Dejerine's disease, the Widal reaction are but a few examples of matters medical with which the names of great Frenchmen will probably always be connected.

BAGASSOSIS

The occurrence of a disease which is characterized by pulmonary symptoms and which is to be found only in those working in the dust of the bagasse that is left over after the extraction of sugar from sugar cane, should be of particular interest to Louisiana physicians, as most of the sugar cane produced in this country is a product of this state.

The disease was originally described by Jamison and Hopkins. Recently eleven additional cases have been presented by Sodeman and Pullen.* These cases, as well as those of Jamison, were observed in the Charity Hospital of New Orleans. In the present report of Sodeman and Pullen it is pointed out that the clinical features of the disease are such that it becomes a relatively simple matter to recognize the condition. Of prime importance are cough and dyspnea in the early stage of the disease. Shortness of breath is present in all of the cases and appears suddenly out of a clear sky. The cough likewise occurs in all instances. The sputum was bloody in four of eleven cases. Usually it is scant and mucoid. Retrosternal pain is often an accompaniment of the dyspnea and cough. The fever is intermittent in character and lasts from three to four weeks in most instances. The respiratory rate is accelerated but tachycardia is not a prominent symptom. Physical examination of the chest exhibits nothing of importance. Rales are heard locally or diffusely scattered throughout the lungs but this is by no means invariable. As a matter of fact the physical examination of the chest, as in viral pneumonias, shows a surprising paucity of physical signs as contrasted with the very marked roentgenologic findings when the lungs are x-rayed. There may be observed a miliary mottling throughout both lungs which is most pronounced in the hilar region.

The laboratory examinations are characterized for the most part by the lack of information that may be obtained by these studies. The leukocyte count is variable, averaging about 13,000 but it may vary from 7-20,000. There is an increase in the eosinophils but this increase may be explained on bases other than the type of infection. There is practically no anemia. It is interesting that in one of the cases there developed a well marked polycythemia some weeks after the acute phase of the disease had terminated. Sputum examinations, blood cultures, agglutination reactions and tuberculin reactions are all negative. The average stay in the hospital is 38 days. The abnormal roentgenologic lung findings disappear as the symptoms subside.

As to the pathogenesis of the disease, there have been various theories advanced.

*Sodeman, W. A. and Pullen, R. L.

Jamison and Hopkins believe that it is due to a fungus but this finding has not been confirmed. Allergy has been incriminated but Sodeman and Pullen made studies by means of skin testing and do not believe that allergy has anything to do with the disease. It has been suggested that silicosis of an unusual form might be the fundamental cause, as bagasse contains from 5-7 per cent silicum. However, the disease does not in any way, form or manner resemble silicosis. Sodeman and Pullen believe that particles of bagasse enter the alveolar regions and produce an irritative pathologic reaction which is responsible for the disease. They confirm this observation in the study of two patients, in the first of whom lung puncture was performed and in whose pulmonary tissue were found "spicules" of an irregular foreign material, microscopically similar to bagasse. These spicules also rotate polarized light as does bagasse. In the patient who came to autopsy similar spicules were also found in the section of the lung. Photomicrographs illustrating this article show these spicules most beautifully. The authors believe that the inflammatory reaction is initiated by particles of bagasse which enter the lung and produce a reaction which tends to heal as result of the cellular response initiated by these foreign particles.

Sodeman and Pullen prefer to call this disease bagasse disease of the lung, inasmuch as the term bagassosis is a hybrid word. The root of the word bagass is the Anglo Saxon "baeg" according to Dr. Thaddeus St. Martin, but the suffix "osis" should be added only to words formed from Greek roots. Perhaps it might be a satisfactory solution of the difficulty to make use of an eponym and to call the disease Jamison's disease after the man who first described it.

ORGANIZATION SECTION

The Executive Committee dedicates this page to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

ACCOMPLISHMENTS OF OUR LEGISLATIVE COMMITTEE

During the recent sixty-day session of our state legislature a joint Committee on Public Policy and Legislation of the State Society and the Orleans Parish Society was extremely busy in Baton Rouge looking after the interest of organized medicine in this state. This necessitated a close liaison with the workings of the committees, the status of important bills in which we were interested, appearance before committees and many other activities successfully to conclude medical bills. I feel certain that the average member of our profession does not realize the great importance of this committee. It commands the respect and esteem of not only the doctors in the House and Senate but of most of the members as well as the executive officers of the state. Unquestionably this status has been built up over years of faithful and loyal service to everyone concerned.

The committee reviewed 66 bills, collectively, however it is not exaggerating to state that many individuals of the committee reviewed an additional number of bills which will bring the total to around 150. It was found that 53 of these bills in one way or another affected the practice of medicine. After final analysis it was found by the committee that 11 bills merited their support. Twenty were opposed by the committee and they remained neutral on 22.

SUMMARY OF BILLS CONSIDERED

Reviewed by committee	66
Affecting practice of medicine	53
Supported by committee	11
Opposed by committee	20
Not acted upon by committee	22

All of the bills supported passed and were signed by the governor except a bill spon-

sored by the school board, known as House Bill 689, which provided for the employment of swimming instructors, dentists, medical doctors and so forth.

It is very interesting to note that the bills which were opposed by our legislative committee failed to pass; either killed in committee, on the floor of the House or Senate, or vetoed by the governor.

BILLS OF SPECIAL INTEREST

The Mental Health Bill, H. 405, after being amended, represented the wishes of the State Society as recently expressed in the House of Delegates, through the Committee on Mental Health, and was passed.

Senate Bill 370, known as the Lunacy Commission Bill, which provides for the reorganization, selection and modus operandi in the consideration of state commissions appointed by judges and provides for compensation, was passed.

Senate Bill 363, creating a board of anatomy to regulate the distribution of unclaimed bodies, was amended by our legislative committee to meet the wishes of the Executive Committee and was passed and signed by the governor.

The attempt made to establish a charity hospital in Algiers, through House Bill 362, was approved by the House but was vetoed by the governor due to lack of funds.

The nurses' bill, known as House Bill 137, permitting the State Board of Nursing Examiners to issue temporary permits during the present emergency, was passed and signed.

It is very gratifying also to report that House Bill 722, known as the Revenue Bill, which exempted from occupational tax physicians registered in this state, was passed.

There were two bills introduced for the training of crippled children. One, House Bill 865, sponsored by the Cripple Children's Department of the State Department of Health, for palsied children, which created a training center in the Deaf and Dumb Institute in Baton Rouge, after successfully passing the House and Senate was vetoed by the governor owing to an error in appropriation. The other, House Bill 540, sponsored by the Louisiana Society for Crippled Children, proposed a plan for the training of crippled children in the various schools of the state, using the present set-up of our state educational system in the teaching and handling of crippled children in our public schools. This was passed and signed by the governor.

Referring to the bills which were opposed by the committee it is interesting to note that one bill, known as House Bill 329, was withdrawn. It provided for the discontinuance of future establishment of any insurance companies in this state and would have prevented, if desired, the formulation of any legislation in the future for prepayment medical insurance by the State Society.

There were a great many bills introduced which would lower the standards and qualifications of pharmacists. The committee was very fortunate in having all of these bills killed or removed from the calendar.

The hardest fight which was encountered was around Senate Bill 347 which permitted the optometrists of this state to expand, making new provisions for their board and permitting them to take care of eyes. With the timely effort of the Chairman of the Health and Quarantine Committee of the House, we were able, against astute lobbyists, to defeat the measure. This is not the first time we have had to compete with new optometrist legislation and from all indications this will be a source of future irritation.

In passing you might wish to know that the following bills which were introduced were acted upon as follows: Qualifications for dean of L.S.U.; premedical requirements; status of interns at Charity Hospital in New Orleans. The first two bills, House Bill 459 and House Bill 461, were withdrawn. The other, House Bill 460, provided that graduates of Tulane and L.S.U. be entitled to internship in New Orleans Charity Hospital. After being amended, by use of the word "should" instead of "shall," this bill was passed by the House and Senate. Report of final disposition has not yet been received.

OBSERVATIONS

It is very distressing to continue to observe that some of our medical groups and individuals give their support to lay organizations in the planning, writing and hearing of medical bills of which our legislative committee has no knowledge. Surely they should know that our legislative committee is at all times ready to lend its effort and wisdom in the production of sound, constructive legislation. Why do our doctors fail to make use of this agency, giving preference and comfort to lay groups which in the past they well know manifested little interest in the ideas of the medical profession of this state? Some of the disagreement and objectionable arguments before the committees of the House and Senate surely would be dispensed with; these, as you know, do not reflect any great credit on either contending force.

When specialists are brought into consultation concerning provisions of a bill affecting their practice, they should give more study and closely scrutinize the wording of the bill, before pronouncing to the committee their approval or disapproval of same.

These are just a few of the more important observations as a result of our recent experience, offered in a purely constructive manner. The logic is plain; you can thus obviate conflict, mis-statements, and what is very important, assist your legislative committee in assessing the merits of a proposed bill for the benefit of the public and physicians.

The friendly cooperation of the State Society and Orleans Parish Society committees, the individual attention and team work, have provided these good results. Truly it can be said, without contradiction, that the entire membership of our organization should be most grateful to these legislative committees. Never have there been more devoted and sincere workers for the cause of organized medicine. The results accomplished represent a stupendous job. It is hoped that the reaction of our members will be one of appreciation and gratitude. We will all enjoy the fruits of their work as members of the State Society and we should continue to give this committee our hearty support.

Our members should be informed that the Executive Committee of the State Society has taken very positive action against the recent policy of the army and selective service in preventing the enrollment of sufficient number of qualified medical students which will inevitably result in a shortage of qualified physicians in the near future. This would be of eminent danger to the health and well being of our citizens. The committee heartily agreed that the Miller Bill recently introduced in Congress (H.R. 5128) should be supported to correct these restrictions. Appropriate letters were addressed to chairmen of various committees which have the bill under consideration. All members of the State Society are asked to read the editorial appearing in the Journal of the A.M.A. on July 8 (page 708). Letters should be written to the various congressmen indicated in this editorial and also to our representatives and senators in Washington protesting a non-American restriction of doctors and asking support of the Miller Bill for correction of same.

We have received information that the United States Public Health Service has discontinued its attempt to relocate physicians in supposedly critical areas. This is due to the fact that so few applications were received for physicians from these areas and also physicians were not available for these relocations.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

LOUISIANA ASSOCIATION OF PATHOLOGISTS

Dr. John R. Schenken, Professor and Head of the Department of Pathology and Bacteriology of the Louisiana State University School of Medicine, was elected President of the Louisiana Association of Pathologists at a meeting held on July 6, 1944, at Charity Hospital. Dr. Bjarne Pearson, of Tulane University, was elected Vice-President and Dr. E. S. Moss, of Charity Hospital, was elected Secretary-Treasurer. Capt. John G. Arnold, of LaGarde Hospital, addressed the Society on the problem of malaria in the battle area.

———o———

APPROACHING MEETINGS

Southern Medical Association Meeting
St. Louis, November 13-16

It was the expressed judgment of the Council at the annual meeting last November that Southern Medical Association meetings are essential, as essential in war times as in peace, if not more so—that physicians, civilian and military, need medical meetings. There are many reasons why the Council believes our annual meetings are essential. The Council was agreed that a meeting should be held this year unless conditions not then anticipated seemed to indicate a meeting should not be held. However, it charged its Executive Committee with the responsibility of a final decision for a meeting this year and the selection of the place of meeting. The Executive Committee met in St. Louis on April 4 and decided that there should be a meeting and accepted the invitation of the St. Louis Medical Society to meet in St. Louis.

The American Congress of Physical Therapy will hold its twenty-third annual scientific and clinical session September 6, 7, 8 and 9, 1944, inclusive, at the Hotel Statler, Cleveland, Ohio. Rehabilitation is in the spotlite today—Physical Therapy plays an important part in this work. The annual instruction course will be held from 8:00 to 10:30 a. m., and from 1:00 to 2:00 p. m. during the days of September 6, 7 and 8. The scientific and clinical sessions will be given on the remaining portions of these days and evenings. All of these sessions will be open to the members of the regular medical profession and their qualified aids. For information concerning the instruction course and program of the convention proper, address the American Congress of Physical Therapy, 30 North Michigan Avenue, Chicago, 2, Illinois.

The program for the Annual Meeting of the Association of Military Surgeons of the United States to be held at the Pennsylvania Hotel, New York City, November 2-4 inclusive, is being rapidly completed. In addition to addresses by the Surgeons General of the Army, Navy, and U. S. Public Health Service and by other distinguished guests, there will be formal papers, panel discussions and scientific and technical exhibits on the latest advances in military medicine.

The Ninth Annual Assembly of the International College of Surgeons will be held on October 3, 4, 5, 1944, at the Benjamin Franklin Hotel in Philadelphia, Pa. The program will be devoted to War, Rehabilitation and Civilian Surgery.

———o———

ALVARENGA PRIZE

The College of Physicians of Philadelphia awarded the Alvarenga Prize on July 14, 1944, to Dr. Gervase J. Connor, Department of Surgery, Yale University School of Medicine, New Haven, Connecticut, for an outstanding study entitled "Anterior Cerebellar Function, An Analytical Study in Functional Localization in the Cerebellum in Dog and Monkey".

The Alvarenga Prize was established by the will of Pedro Francisco daCosta Alvarenga of Lisbon, Portugal, an Associate Fellow of the College of Physicians, "to be awarded annually by the College of Physicians on each anniversary of the death of the testator, July 14, 1883, to the author of the best memorial upon any branch of medicine which may be deemed worthy of prize".

The College usually makes this award for outstanding published work and invites the recipient

to deliver an Alvarenga Lecture before the College. The College may occasionally, as in this instance, award the prize for an exceptionally important manuscript submitted in competition.

In 1940 this prize was won by Dr. Ernest W. Goodpasture of Nashville, by Dr. Ernest Carroll Faust, of New Orleans, in 1943.

———o———

MEDICO-LEGAL COURSES

The Harvard Medical School with the co-operation of the Medical Schools of Boston University and Tufts College has planned a condensed one-day conference and a one-week seminar in forensic medicine. The one-day conference is to be held October 4; the one-week course October 2-7. This latter course is planned principally for medical examiners and coroner physicians.

For further information address Harvard Medical School, Courses for Graduates, 25 Shattuck Street, Boston 15, Massachusetts.

———o———

PHYSICIAN-ARTISTS' PRIZE CONTEST

The American Physicians Art Association, with the co-operation of Mead Johnson & Company, is offering an important series of War Bonds as prizes to physicians in the armed services and also physicians in civilian practice for their best artistic works depicting the medical profession's "skill and courage and devotion beyond the call of duty".

Announcement of further details will be made soon by the Association's Secretary, Dr. F. H. Redewill, Flood Building, San Francisco, Cal.

———o———

INFECTIOUS DISEASES IN LOUISIANA

The Louisiana State Board of Health reported that during the week ending June 10 there were reported the following diseases in numbers greater than 10: pulmonary tuberculosis 56, malaria 33, measles 21, mumps 20, unclassified pneumonia and typhus fever 12 each. During this week there were reported also seven cases of poliomyelitis, of which were reported three from Orleans Parish, two from Terrebonne, one from East Baton Rouge and one from Jefferson. For the week ending June 17 there were listed 80 cases of malaria, 48 of measles, 35 of pulmonary tuberculosis, 30 of bacillary dysentery, 19 of mumps, 15 each of hookworm infestation and septic sore throat. There were five cases of poliomyelitis reported; Iberia Parish with two cases, being the only parish with more than one. There was 26 malaria cases reported from military sources: 43 of these cases reported in Jackson Parish. For the week ending June 24 measles led all other reportable diseases with 42 cases followed by 30 of pulmonary tuberculosis, 28 of mumps, 17 of unclassified pneumonia and 14 of malaria. The seven cases of poliomyelitis recorded this week came from around New Orleans; five from Orleans Parish and two from Jefferson. The weekly report which came out on July 1 listed the number of venereal disease cases for the previous four weeks. In this time 1329 cases of syphilis were listed, 1292 of gonorrhea, 42 of chancroid, 13 of granuloma inguinale and 12 of lymphopathia venereum. The non-venereal diseases included the marked number of 74 cases of pneumococcic pneumonia, 21 of malaria, 20 of pulmonary tuberculosis and 14 of mumps. There was a surprisingly large number of unclassified pneumonia cases listed, 320 in all, about fifty per cent of the total for the entire year. The four poliomyelitis cases that were reported came from different parishes throughout the state.

———o———

HEALTH OF NEW ORLEANS

The Bureau of the Census, Department of Commerce, reported that for the week which ended June 17 there were 139 deaths in the City of New Orleans as contrasted with 153 the previous week. Of these patients who died 82 were white, 57 colored and 14 of the total were infants under one year of age. In the week ending June 24 there was a marked increase in number of deaths, there being 164 deaths as contrasted with the three-year average for the corresponding week of 146. Ninety-four of the people of New Orleans who died this week were white, 70 of them were colored and 15 of them were children under one year of age. For the week which terminated July 1 there again was a very marked increase in the number of deaths in the city, there being 191 divided 128 white, 63 colored and 16 infants. The number of deaths in the city this week was in numbers 48 greater than in the corresponding week for the previous three years. For the week ending July 8 there was a sharp reduction in the number of deaths in the city although this was still well above the three-year average. One hundred and thirty-nine citizens of the city expired, the white population falling to the amazingly low figure of 55 but the colored quite high with 84 deaths. There were only 12 deaths in children under one year of age.

DR. JAMES ALEXANDER WHITE

(1868 - 1944)

The many friends of one of the best known of the older practitioners of the state, Dr. James Alexander White, were dismayed to hear of his death. For many years Dr. White was active in medical circles in the State of Louisiana. He was graduated from the College of Physicians and Surgeons in 1892.

BOOK REVIEWS

Aesculapius in Latin America: By Aristides A. Moll, Ph. D. Philadelphia, W. B. Saunders Co., 1944. Pp. 699. Price, $7.00.

This is truly an epochal book, if we may so designate a work that marks the beginning of an era in the medical history of Latin America, written in English and for the first time interpreted in its full significance as an aggregate of nations of the same parent stock, viewed as a whole without special regard to their geographic or political limitations. This book is also a monumental production in the great scope of its encyclopedic survey of the vast treasure of historic lore that has remained too long buried and unexploited by the literary gold diggers of the English tongue who have not yet awakened to the reality of the mine of medico-literary wealth that they have so signally overlooked. Fortunately, medical literature and the medical history of Latin America treated in the aggregate and *in bloc*, as has been done so successfully in this book, have not suffered by the long delayed recognition of their merit, for the man had not yet appeared who could attempt this magnificent but difficult enterprise, with all the qualifications necessary to carry it to a successful realization. The rare combination of qualities for such a task, as they are revealed in every page of this book, are preeminently those of a scholar deeply learned in the Spanish and other languages of the Latin American peoples. A genuine sympathy and inherent understanding of the people who spoke them; a passionate interest in the work and in the medical lore and literature of the medical institutions and personalities in medicine and the allied sciences in relation with the outside world. All this on the one hand, and on the other, a thorough mastery of English with a clear possession of its vernacular strength and graces of diction that would do justice to the idiomatic and faithful interpretation of the Latin American texts. As a result of years of tireless investigation and zealous industry, in an environment most conducive and satisfying for bibliographic research and for the cultivation of inter-American relations, the author, Dr. Aristides A. Moll, long known to all in touch with Latin American affairs, as the learned and most efficient Secretary-editor of the Pan American Sanitary Bureau at Washington, and advisor in tropical diseases to the Secretary of State, has produced a book, which in its originality, literary quality and enormous wealth of new and ordinarily inaccessible information on the medical history and institutions of the Latin American countries has no parallel in English medical literature. In this sense it remains unrivalled in its own Latin American field, finding comparison only in Garrison's History of Medicine, which remains the first, unique and greatest historic product of American medical literature. Like that master work, Dr. Moll's Aesculpius in Latin America displays the meticulous thoroughness and accuracy of its quotations and bibliographic references; in the chronology of notable events and most useful "subject" and "author" indices, not forgetting the unique maps of the western hemisphere with the geographical location and distribution of the most conspicuous historic events associated with Latin American explorations and personalities. The illustrations are a very striking feature of this book. They are far more numerous than in any other texts of correlated interest. They are almost all unusual and unfamiliar reproductions of scenes, institutions and especially portraits, of outstanding personalities in the Latin American medical world. Altogether, they constitute a pictorial gallery, a sort of Hall of Fame, which embraces the most illustrious representatives of medicine in the Latin American republics as they stretch all the way from the Mexican border, south of the Rio Grande, to the tip of the South American continent in Chile and the Argentine.

The 699 pages of text include a remarkable introduction which is a preview and a foretaste of the vast store of learning that awaits the reader as he enters into the text; a preview that would certainly be appalling to any pretentious amateur in historical research who would, unknowingly, attempt to follow in the master's footsteps and dream of climbing to his stature. Three basic divisions of the book follow the introduction. The first covers the colonial period from the Columbian discovery in 1492 to 1808, which is developed in 39 well nourished chapters. The period of Independence in 78 most fascinating sections, which deal attractively with every phase of medical life in Mexico, Central and South America and the West Indies. The chronology, both medical and general, begins with Columbus in 1492 and ends, year by year in 1943 with the most notable events connected with Latin American war relations with inter-American cooperation in foreseeing Pan American solidarity of the western hemisphere, penicillin and other items of contemporary interest, too numerous to mention.

The index of names (13 pages) is a veritable "Who's Who" in the medical hierarchy of the Latin American countries.

Quite apart from its historic and bibliographic value there is much to learn from the author's philosophy and his judicious and discriminating but always friendly criticisms of Latin American institutions and life.

The medical people of Latin America will welcome this book with acclaim and well justified pride in the fine showing of their "Hall of Fame" and as a refutation of the alleged foreign dictum that "Latin America is better in consumption than in production." In so far as North America and the English speaking world are concerned, Dr. Moll's book will come as a revelation and a new concept of Central and South American historic wealth and of the immeasurable intellectual potentialities that will soon find their greatest expansion in the unavoidable freedom of communication and aerial transportation of the post-war.

Finally, this reviewer predicts with certainty of verification, that no American medical traveller bent on a visit to the shrines of Aesculapius in Latin America, will ever start on his journey without a copy of Moll's book under his arm as his indispensable *vade mecum*.

RUDOLPH MATAS, M. D.

Operative Oral Surgery: By Leo Winter, D. D. S., M. D., F. A. C. D., ScD. (Hon. LL. D. 2d ed. St. Louis, The C. V. Mosby Company, 1943. Pp. 1074, illus. pl. Price, $6.00.

The second edition of this important book possesses all of the merit of the first printing with added material to meet the present emergency—new chapters, bringing the treatise up to date cover chemotherapy, shock, burns, war wounds, dislocation and subluxation of the temporomandibular articulation and skeletal fixation for treatment of fractures.

The book is profusely illustrated, ranging from the most elementary armamentarium and positions of patients to technical procedures which are clearly and adequately presented in successive stages. There are shown, likewise, chemical, pathologic and x-ray findings which illustrate with detailed care the conditions so thoroughly described.

The section on fractures is particularly to be commended. Accepted present methods are emphasized and both anatomic and physiologic principles are stressed.

The author, in the new chapter on skeletal fixation, very wisely describes various methods and does not endeavor to influence the reader to his own preconceived ideas or opinions. This reviewer believes this to be the proper, broad-minded view because of the wide difference in concept as well as methods of application in this new means of handling fractures of the jaw.

Chapter XIX on neoplasms in the oral cavity is in keeping with the other sections of this well balanced treatise and is divided into those of foreign and benign and malignant character, their diagnosis and management.

While some principles of plastic repair and reconstruction are commented upon, reparatory procedures of extensive character are not included as they correctly belong to a different and highly specialized field.

With so many years of experience as teacher, clinician and operator there is perhaps no one better qualified to produce a book of such magnitude on oral surgery and the character and completeness of the text justifies this statement.

The volume is unreservedly recommended to the general surgeon, the dentist and the oral surgeon. It should be of particular help to the dentists and those in the armed forces called upon to handle the facial and oral injuries of war.

WALDEMAR METZ, M. D.

Synopsis of Neuropsychiatry: By Lowell S. Snelling, Sc. M., M. D., Ph. D., Dr. P. H. St. Louis, C. V. Mosby Co., 1944. Pp. 500. Price, $5.00.

At times in the past teachers in Medical Colleges have discouraged use of compends and synopses. But the rapidly widening scope of professional knowledge and the necessity to step up performance and production, in the training of doctors, has resulted in the appearance of numerous small, condensed, factual books.

The author of this excellent manual has omitted much of the unnecessary detail of the conventional medical textbook. He has written a simplified, systematic coverage of neuropsychiatry which will be of inestimable value to the specialist who wishes to review his subjects briefly and in which the student can secure a quick guide for diagnosis and treatment and a substantial knowledge of the subjects so admirably presented.

Enough neuro-anatomy and neuro-physiology is included to render the organic neurological syndromes easily comprehensible. Sufficient psychopathology, abnormal psychology and psychoanalysis are presented to provide a background for the understanding of functional nervous and mental disorders. In view of Doctor Selling's eminence in medicolegal psychiatry his "medicolegal" comments are most interesting and valuable.

It hardly seems possible that so much authoritative information could be put in so small a book conveniently arranged as a portable, ready reference. This book is a splendid one in every way. Anyone interested in neuropsychiatry will certainly profit greatly by using it.

C. P. MAY, M. D.

The American Illustrated Medical Dictionary: By W. A. Newman Dorland, A. M., M. D., F. A. C. S. Philadelphia and London, W. B. Saunders Company, 1944. Pp. 1,668. Price, $7.50.

The 20th edition of this very well known medical dictionary has been considerably revised and enlarged. Dr. Dorland in revision of this present edition collaborated with Dr. E. C. L. Miller of Richmond and a group of other individuals who have lent aid and made suggestions and otherwise helped in the revision of the book. To all these men Dr. Dorland has given credit to this 20th edition. It hardly seems necessary to offer criticism of a book that has been a standard publication since 1900. As a matter of fact, the only real criticism is that this dictionary is getting to be almost the size of a standard English dictionary. The only suggestion to make to reduce the size would be to reduce materially the anatomical contents, such as the table of arteries and the listing of the veins. Informations concerning the vascular system can be readily obtained from any anatomy book. It hardly seems necessary to put in colored cuts. Certainly the one on biliary calculi is not worth the space that it takes up in a volume that is already somewhat oversized.

These criticisms are minor and trivial. The Dorlands have done such excellent work in preparing the innumerable editions of this dictionary that a volume or a new edition appears every little while, attesting to the popularity of the book and to its well worth while character.

J. H. MUSSER, M. D.

A Dynamic Era of Court Psychiatry, 1914-44, ed. by Agnes. A. Sharp, M. A., Ph. D. Chicago, Psychiatric Institute of the Municipal Court of Chicago. 1944. Pp. 149. Gratis.

The purpose of ths book is twofold: to record the first thirty years of service of the Psychiatric Institute of the Municipal Court of Chicago, and to present scientific facts of Court Psychiatry with some prediction, as we face a period of readjustment perhaps more confused than any we have yet come through. The numerous articles appearing in this valuable report emphasize the fact that data are rapidly accumulating on Court Psychiatry and reveal a growing appreciation of the enormous value of psychological medicine in attempting to dispose of the problems of human conduct which are ever coming before the courts to be solved or disposed of.

Everywhere, each year, thousands of minor infractions of the law by mentally ill persons bring them to the notice of a court. To judge these individuals purely on the basis of their quasi-criminal conduct could result in miscarriage of justice ending in many of these persons being sent to institutions not equipped to handle them.

Many of the crimes committed by mentally ill persons are peculiar to the mental disturbance itself. When such persons are examined and reported upon by The Institute an enlightened judiciary is properly guided in its evaluation of behavior disturbances, particularly of the bizarre types of mental manifestations so frequently seen in psychotic individuals. In this way many cases of incipient mental disorder are discovered and proper measures may be taken to endeavor to correct them.

To examine and evaluate the extensive and valuable material presented in this small volume is somewhat of a job and it cannot be adequately covered in a brief review. Use of this book will afford great help to anyone interested in the medicolegal relations of psychiatry.

C. P. MAY, M. D.

Rorschach's Test. Vol. 1. Basic Processes: By Samuel J. Beck, Ph. D. New York, Grune and Stratton, 1944. Pp. 223. Price, $3.50.

Doctor Beck, whose "Introduction to the Rorschach Method" in 1937 gave students a valuable manual of procedure, now reports "a field excursion into Rorschach associations" to "demonstrate the processes used in evaluating Rorschach test responses." His contention has always been that the Rorschach method is objective, and capable of being applied by anyone willing to undergo the required prerequisite rigorous training. As an aid in such training, he has in the present book provided students "with a moderately stable frame of reference."

No attempt at interpretation is made in "Basic Processes". Individual responses drawn from normals, mildly disturbed, and definitely pathologic cases are cited verbatim, scored, and the reasons for scoring cited in detail. Separate chapters are devoted to the various basic problems in scoring. Thus it makes possible comparison of response summaries on a quantitative basis, apart from the psychologic interpretation.

Although the scoring is but slightly modified from the 1937 version, some of the English symbols have been discarded in favor of those used in the Lemkan-Bronenberg translation of the original "Psychodiagnostik" by Herman Rorschach. The numbering system used for the details is a complete revision of the 1937 system, and accordingly must be patiently mastered by students of the Rorschach method.

Both student and expert will find "Basic Processes" an indispensable reference book, and will regard it as a contribution to the development of

the Rorschach technic as important as is Doctor Beck's "Introduction to the Rorschach Method."

MARION MCKENZIE FONT.

A Hundred Years of Medicine: By C. D. Haagensen, M. D., and Wyndham E. B. Lloyd, M. D. New York, Sheridan House, 1943. Pp. 444. Price, $3.75.

This is really a delightful book which in reading will afford a great deal of pleasure to any one interested in medicine. It is written primarily for the lay individual but the physician, when, as and if he ever has time for light reading, will derive considerable benefit from its perusal; he will attain a great dea lof historical information which will recall to his memory most clearly the outstanding contributions of medicine, and its many ramifications, in the past hundred years.

The book, while divided into sections and chapters, is really a series of essays on a variety of subjects which have been of paramount interest during the last century so that the individual chapters are thus more or less complete in themselves. The four sections of the book have to do with "medicine up to 100 years ago, medical science during the last 100 years, surgery during the last 100 year" and the fourth and last, "the new social aspects of medicine." The first section has largely to do with medicine as it existed 100 years ago, the next two sections describe the astounding advances made in medicine and surgery during this period of time and the last section in part forecasts what medicine may be in the future.

The book is so interesting and so well written that it makes for easy reading. The factual data are accurate. The format of the volume is excellent and the numerous illustrations are well selected and clearly reproduced.

J. H. MUSSER, M. D.

Poliomyelitis; The Relation of Neuroscopic Streptococci to Epidemic and Experimental Poliomyelities Virus, Diagnostic Serologic Tests and Serum Treatment: By Edward C. Rosenow. New York, International Bulletin for Medical Research and Public Hygiene, 1944. Vol. A44. Pp. 87.

In this monograph Dr. Rosenow has reviewed (with bibliography) his work over a period of twenty-seven years concerning the role of streptococci in poliomyelitis. One is appreciative of the courtesy of the editors of the International Bulletin in making it possible for this comprehensive summary of the data to be published as well as for the high quality of the typography and reproduction of photographic material. However, after reading the monograph one is still left unconvinced of the validity of the claims which are made, despite an entire willingness to accept the author's honesty and sincerity. This skepticism is due in large part to statements which are in complete contradiction to the overwhelming bulk of evidence obtained by many other, equally experienced workers. Some examples seem noteworthy.

1. Dr. Rosenow has found streptococci by smear in the spinal fluids of 54 per cent of persons with acute epidemic poliomyelitis and by culture in dextrose-brain-broth medium in 38 per cent of cases (p. 20). This high incidence of positive findings is entirely opposed to the generally accepted view that it is useless to seek to isolate the agent of poliomyelitis from the spinal fluid of either pre-paralytic or paralytic cases, as such attempts are almost invariably unsuccessful. If the streptococci found by Dr. Rosenow in the spinal fluid do represent the agent of poliomyelitis, it should be a relatively easy matter to reproduce the disease by transfer of this material to monkeys; this is not the case.

2. Dr. Rosenow's neurotropic streptococci produce extreme flaccid paralysis upon inoculation into guinea pigs and rabbits (pp. 32-33 and 58-59), whereas other workers have repeatedly observed that the infective agent in the brain and cord of poliomyelitic humans or monkeys regularly fails to affect rabbits or guinea pigs.

3. In Rosenow's hands, 8 per cent of brain and cord emulsions from monkeys with typical poliomyelitis yielded positive cultures for streptococci when diluted as high as 10^{-20} (p. 20). A simple calculation will convince anyone that, whether the agent of poliomyelytis were present in the form of streptococci or in the form of a filtrable virus with diameter of approximately 8 mu (as believed by workers in the virus field), it would be physically impossible for 10^{20} such particles to be contained in a volume of one cubic centimeter.

4. According to Rosenow the intracerebral injection of dead arthritis streptococci into monkeys results in their prompt disappearance from the spinal fluid and their appearance, often in considerable numbers, in the articular fluid; the intracerebral inoculation of dead neurotropic streptococci, on the other hand, as followed by no penetration into the joint fluid (p. 56). It is difficult to accept this observation as due to other than uncontrolled experimental factors.

5. Dr. Rosenow has been able to isolate a transmissible filtrable agent producing typical symptoms and lesions of poliomyelitis from strains of streptococci derived from sources wholly unrelated to poliomyelitis such as malignant endocarditis and from a case of postoperative persistent hiccup and bronchopneumonia (p. 66).

6. Eighty-seven per cent of persons in the early stages of acute poliomyelitis gave erythematous

cutaneous reactions to be a bacterial antigen prepared from poliomyelitis streptococci (p. 46); a similar percentage (87) of persons in the acute stages of poliomyelitis yielded positive cutaneous reactions to the euglobulin fraction of streptococcic antiserums (p. 49). Rosenow's finding, that the great majority of poliomyelitis patients react both to streptococcal antigen as well as to antistreptococcal antibody while in the same stage of the disease, is almost unique since in nearly all other known instances patients in any particular stage of a disease are found to react to either antigen or antibody but not to both concurrently.

While it is fortunate that this review has been made available, since it gathers together data presented by Dr. Rosenow in numerous publications over many years, the case for the role of streptococci in poliomyelitis does not yet seem proved.

MORRIS F. SHAFFER, D. Phil.

PUBLICATIONS RECEIVED

American Medical Association, Chicago: New and Nonofficial Remedies, 1944. Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1943.

Charlotte Medical Press, Charlotte, N. C.: Metastases, by Malford W. Thewlis, M. D.

The Commonwealth Fund, New York: Mosquito Control, by William Brodbeck Herms, Sc. D. and Harold Farnsworth Gray, Gr. P. H.

Grune and Stratton, Inc., New York: Artificial Pneumothorax in Pulmonary Tuberculosis, by T. N. Rafferty, M. D. The Electrocardiogram, by Louis H. Sigler, M. D., F. A. C. P.

J. B. Lippincott Company, Philadelphia: Fertility in Men, by Robert Sherman Hotchkiss, B. S., M. D. Fertility in Women, by Samuel L. Siegler, M. D., F. A . C . S.

Charles C. Thomas, Springfield, Illinois: The Pathogenesis of Tuberculosis, by Arnold R. Rich, M. D. Technic of Electrotherapy and Its Physical and Physiological Basis, by Stafford L. Osborne, M. S., Ph. D. and Harold J. Holmquest, B. S., B. S. (M. E.)

BUY

UNITED STATES WAR

BONDS and STAMPS